Managing Technical People
Half Day Tutorial
CMMI Technology Conference
November 15, 2004
Introduction and Course Overview
Lecture Overview

Introductions, expectations, and course overview

Project management issues

Why are we here?

Course objectives
Introductions

Who we are
  Names
  Jobs

Who you are
  Names
  Jobs

What you expect to get out of this course
Course Overview

This is a course for project managers, team leaders and supervisors who are directly responsible for managing software development and technical projects.

The material for this course is drawn from:

- *Managing Technical People* by Watts Humphrey
- *High Flyers* by M.W. McCall Jr.
- *Managing Yourself*, HBR Article by Peter Drucker

The course combines lectures with class discussions and exercises.
Class Discussion

Why do some projects fail and some others succeed?
In large companies, only 9% of the projects are completed on time and within budget.

About 53% of projects will cost 189% of original estimate.

According to one estimate, the opportunity cost of poor project management, while not measurable, could easily be in the trillions of dollars.
Executives accept schedule commitments when the engineers offer no evidence that they can meet these commitments.

Engineers agree to dates when they have no idea how to meet them.

Project managers concentrate on the work to be done and pay little or no attention to the disciplines with which the work is done.
While disciplined methods are known, management does not always ensure their consistent use.

Motivation declines as professionals gain experience; all non-technical elements of motivation are controllable by the immediate manager.

Heroic efforts rescue troubled projects; heroes are in short supply.
To address these issues, it is not enough that we just try harder.

Executives must personally lead their organization’s transformation into the modern world of engineered software.

The first step in the transformation is the transformation of the individual.
Variation between people has enormous implications for how we manage people as well as how we can predict performance.

The goal must be to make productive the specific strengths and knowledge of each individual.
This course shows project managers

- How to manage themselves
- Take charge of their development
- Set leadership standards
- Motivate their technical staff to create high achievers
Course Objectives - 1

Understand the importance of self-awareness and the need to take charge of his/her development

Understand the standards of leadership - commitment, professionalism and respect for the individual – and the manager’s role in them

Understand the various factors for motivating and developing professionals to create high achievers
Course Objectives - 2

Practice situational leadership depending on the professionals’ maturity levels for performing tasks and their attitudes towards their jobs and management

Set up guidelines for award and recognition program

Understand how Team Software Process℠ and Personal Software Process℠ provide the management framework to build and manage superior technical teams
# Agenda

<table>
<thead>
<tr>
<th>Topic</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Introduction</td>
<td>10</td>
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<tr>
<td>Managing Yourself</td>
<td>50</td>
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<tr>
<td>The Manager as Leader</td>
<td>30</td>
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<tr>
<td>Break</td>
<td>30</td>
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<tr>
<td>Motivating and Developing Professionals</td>
<td>45</td>
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<tr>
<td>Teamwork</td>
<td>45</td>
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Summary - 1

Project management issues are receiving top management attention

The future software world requires a new management style

This course provides you with the knowledge and skills needed to manage yourself, take charge of your development, set leadership standards, motivate your technical staff, and create teams of high achievers
The job of leading people - Opportunities
The thrill of leading a motivated group of professionals to accomplish a challenging goal
Help people to produce at their very best

The job of leading people – Obligations
Doing the utmost to develop and support your people
Principal obligation of leadership is to both lead your people and learn from them
Observe your people and think about their needs
Constantly strive to improve the way you lead and concentrate on being more of a coach than a manager
“Since the release and full use of the individual’s full potential is the organization’s true task, all organizations must provide for the growth and development of their members and find ways of offering them opportunities for such growth and development. This is the one true mission of all organizations and the principal challenge to today’s organizations.” — Warren Bennis
Managing Technical People for Project Managers - Lecture 2

Managing Yourself
“That one can truly manage other people is by no means adequately proven. But one can always manage oneself.”

Peter Drucker
Managing Yourself Overview

Taking charge of your development

Self-awareness and being proactive

Self-development plan
Class Discussion

How do organizations develop leaders?
Taking Charge of Your Development

Leadership development – myths and reality

Reasons for taking charge

Self-development model
Myths

Leadership ability is something that one either has or does not

The fittest will not only survive, but will also, more often than not, end up at the top
Leadership Development - 2

Reality

Leadership ability can be learned

Creating a context that supports the development of talent can become a source of competitive advantage

Development of leaders is itself a leadership responsibility
Reasons for Taking Charge - 1

Ideal world

Organizations would:
Clerish the potential of individual employees
Understand completely how to help develop that potential
Provide developmental opportunities based on that understanding
Take responsibility for ensuring that each person lived up to his or her full potential
Real world

Organizations may have the best of intentions, but you still have to do what you can to get yourself where you want to go.

Change is inevitable.

People who do not grow to meet the challenges presented by change will not continue to be successful.

The person with the greatest vested interest in your success is you.

“Pray to God, but row toward shore”
Seven Reasons for Taking Charge

1. There is no standing still for organizations or the people in them. Change is a constant for the foreseeable future.

2. When situations change, strengths can become weaknesses; weaknesses that didn’t matter before can become central; and arrogance based on past success can become dangerous.

3. Your organization probably does a lousy job of developing people.
4. As long as the organization has or can get enough of the talent it thinks it needs, it doesn’t care if it’s you in particular.

5. The implied lifetime employment contract no longer exists. Even satisfactory performance is not enough to guarantee a job for life.

6. Organizations may make change difficult, but the real obstacles to change are within you.

7. It’s the right thing to do.
A Model for Developing Executive Talent

Source: Morgan McCall, Jr, “High Flyers”
A Model for Self-development

Proactive Stance

Self-Awareness

Personal Vision

Opportunity To Grow

Create a Learning Environment

The Person You Want To Be

Source: Morgan McCall, Jr, “High Flyers”

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Self-awareness and Being Proactive

Self-awareness

Proactive
Self-awareness

“Until you truly know yourself, strengths and weaknesses, know what you want to do and why you want to do it, you can not succeed in any but the most superficial strength of the word.”

Source: Warren Bennis, On Becoming A Leader

“Success in the knowledge economy comes to those who know themselves – their strengths, their values, and how best they perform.”

Source: Peter Drucker, “Managing Oneself”, HBR March-April 1999

“Effective self-management is the foundation for almost everything we do.”

Source: Watts Humphrey, Introduction to the Team Software Process
Being Pro-active - 1

Peter Drucker’s list of questions to ask yourself

What are my strengths?
How do I perform?
   Am I a reader or a listener?
   How do I learn?
What are my values?
Where do I belong?
What should I contribute?
What are my strengths?

“One should waste as little effort as possible on improving areas of low competence. It takes far more energy and work to improve from incompetence to mediocrity than it takes to improve from first-rate performance to excellence.”

Peter Drucker
How do I perform?

“Do not try to change yourself – you are unlikely to succeed. But work hard to improve the way you perform. And try not to take on work you can not perform or will only perform poorly.”

Peter Drucker
What are my values?

“To be effective in an organization, a person’s values must be comparable with the organization’s values. They do not need to be the same, but they must be close enough to coexist. Otherwise, the person will not only be frustrated but also will not produce results.”

Peter Drucker
Where do I belong?

“Successful careers are not planned. They develop when people are prepared for opportunities because they know their strengths, their method of work, and their values.”

Peter Drucker
Watts Humphrey’s three elements for effective self-management

- Being responsible
  - Ownership and attitude
- Striving for defined goals
  - Setting priorities
- Living by sound principles
  - Your opinion of yourself
  - Your opinion of others
  - Your commitment to excellence
“Acting responsibly can seem risky. In fact it is the least risky alternative…. Every day that you wait to act is a day you can not use to solve the problem. In fact, there are two unwritten laws of software and technology. One is that a project gets to be one year late one day at a time. The other is that surprises always cause more work to be done. So, act responsibly in everything you do.”

Watts Humphrey
Striving for defined goals

“What people overlook is that when schedule becomes the only goal, people forget that they need to deliver a product that works and meets customer requirement.”

Watts Humphrey
Living by sound principles – your commitment to excellence

“What was once considered excellent no longer is. This means that we must continually focus on improving our personal capabilities.”

Watts Humphrey
Self-development Plan

Perform self-assessment of strengths and weaknesses

Develop a personal vision

Identify development opportunities

Create a learning environment

Establish guidelines for self development
Self-assessment - 1

Deep understanding of strengths, weaknesses and undeveloped areas that need bolstering to achieve future goals

Ability to predict how you will react in specific situations and what impact your reaction will produce

Ability to accurately predict what other people would say if asked to describe your strengths and weaknesses

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Self-assessment – 2

Part 1 - Identify strengths that have made you successful so far and then describe the potential dark side of their strengths

Part 2 - Describe your flaws and then identify those flaws on which you have received repeated feedback

Part 3 – Consider changes the future may bring
## The Paradox of Triumph and Disaster - 1

<table>
<thead>
<tr>
<th>Sources of Success</th>
<th>The Darker Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track Record</td>
<td>Can be in a narrow technical field; may be due to others; may have moved up too fast</td>
</tr>
<tr>
<td>Brilliance</td>
<td>Can be intimidating to others; may devalue others’ ideas and contributions</td>
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</tbody>
</table>
## The Paradox of Triumph and Disaster - 2

<table>
<thead>
<tr>
<th>Sources of Success</th>
<th>The Darker Side</th>
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</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>Defining whole life in terms of work and expecting others to do the same</td>
</tr>
<tr>
<td>Charm</td>
<td>Using charm to selectively manipulate other people</td>
</tr>
<tr>
<td>Sources of Success</td>
<td>The Darker Side</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Ambition</td>
<td>Doing whatever is necessary to achieve personal success</td>
</tr>
<tr>
<td>Competency</td>
<td>Potential Dark Side</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Team Player</td>
<td>Not a risk taker, indecisive, lacks</td>
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<tr>
<td></td>
<td>independent judgment</td>
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<tr>
<td>Customer-focused</td>
<td>Can’t create breakthroughs, can’t control</td>
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<tr>
<td></td>
<td>costs, unrealistic, too conservative</td>
</tr>
<tr>
<td>Biased toward</td>
<td>Reckless, dictatorial</td>
</tr>
<tr>
<td>action</td>
<td></td>
</tr>
<tr>
<td>Competency</td>
<td>Potential Dark Side</td>
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<tr>
<td>---------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Analytic Thinker</td>
<td>Analysis paralysis, afraid to act, inclined to create large staffs</td>
</tr>
<tr>
<td>Has Integrity</td>
<td>Holier than thou attitude, rigid, imposes personal standards on others, zealot</td>
</tr>
<tr>
<td>Innovative</td>
<td>Unrealistic, impractical, wastes time and money</td>
</tr>
<tr>
<td>Competency</td>
<td>Potential Dark Side</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Has Global Vision</td>
<td>Misses local markets, over-extended, unfocused</td>
</tr>
<tr>
<td>Good with People</td>
<td>Soft, can’t make tough decisions, too easy on people</td>
</tr>
</tbody>
</table>

The Paradox of Triumph and Disaster - 6
Part 1, Personal Vision

1. What do you want to achieve with your life?
   State as briefly and clearly as you can what you would like to achieve within a reasonable span of time

2. What are your moral stance and priorities?
   State what you stand for, what you are willing to sacrifice to reach your goals and what values you hold sacred

3. What do you want your legacy to be?
   State how you would like to be remembered
Part 2, Organizational strategy

1. Where is the organization going? What are the most important strategic thrusts?
   If you can not answer, your objective must be to better understand your organization.

2. What are the leadership challenges presented by these strategic thrusts?
   Figure out the challenges in achieving those objectives.

3. What experiences do you need to have if you are to be one of the people the organization will turn to?
   State what experiences could prepare a person for leading through those challenges.
Develop a Personal Vision - 3

Key points

Acquire skills your organization will need as future challenges unfold

You must understand your company’s strategy

Get into experiences that prepare you for the challenges
Part 3, Reconciling Parts 1 and 2 and your self-assessment

Most difficult and least defined
Create a development agenda based on self assessment and Parts 1 and 2
Focus on what is needed, later steps will address “how”
There is no formula to follow, everyone’s plan will be different
May even be an extremely personal goal related more to your values and the legacy you want to leave
Identify Developmental Opportunities

1. Describe situations that you would like to be able to handle well
2. Brainstorm all the possible experiences which would force you to learn those abilities
3. Rank these experiences in order of priority as the most powerful teachers
Find the paths that lead you to powerful experiences
Use your creativity to list as many paths as you can think of

Take the initiative to make the experiences happen
Ask, volunteer, join, trade, bargain, buy

Have a replacement to convince organization you can be spared

Basic rule: Find experiences that will allow growth
Create a Learning Environment

List things in your environment that can help you learn

*Information*: how well you are learning

*Incentives*: how to reward yourself

*Resources*: books, courses, role models, and “lab”

*Support and Encouragement*: create a psychological and social air for yourself
Guidelines for Self Development

Your development is your responsibility

Be sure you believe in what you are trying to do

A plan is not the destination

A developmental opportunity is not always a promotion

Development is not automatic

Hunker down for the long haul
Summary

Be responsible to yourself

Develop yourself based on your personal goals and strengths

See your strengths as a paradox and avoid possible dangers

Find experiences that allow growth

Balance your view of life and your life
Managing Technical People for Project Managers - Lecture 3

The Manager As A Leader
The Manager As A Leader - Overview

Technical leadership
The commitment ethic
Commitment issues and manager’s role
Importance of professionalism and manager’s role
Respect for the individual
Class Discussion

What are some characteristics of great leaders?
Technical Leadership

The most important role is to set goals and meet them unswervingly

Have the courage to stick with the goals

Transformational leadership
   Build on dreams and ambitions

Transactional leadership
   Build on dedication and pride

Source: Watts Humphrey
When people understand and accept a goal and believe they can meet it, they will generally work very hard to do so.

If goals require too dramatic a change, people will have trouble knowing how to start.

Immediacy of the goal is important. There are so many short-term crises that a long term objective is often deferred until it too becomes a current crisis.
People should define their own goals

If they can’t, management should help and remove constraints. Then they will accept aggressive goals and strive to meet them
Irrational Behavior

Executives accept schedule commitments when the engineers offer no evidence that they can meet these commitments.

Engineers agree to dates when they have no idea how to meet them.

Project managers concentrate on the work to be done and pay little or no attention to the disciplines with which the work is done.
Trust the professionals that they will act creatively and provide solutions

Give the professionals aggressive goals

Ask for detailed plans to show how they will meet the aggressive schedule

Be prepared to evaluate alternate plans
Points to remember

If it doesn’t have to work any body can deliver on time

If you want the product in the worst way, that’s how you will get it

If the situation looks truly impossible, it probably is
The Commitment Ethic

The elements of commitment
Making responsible commitments
Commitment hypnosis
Overcommitment
Managing commitments
Changing commitments
Trust
Ownership
The Elements of Commitment

When one person makes a pact with another and they both expect it to be kept

It’s the way to “sustain action in the face of difficulties”

Motivation to meet commitments is largely the result of the way the commitment is made

It must be freely assumed

Its visibility is equally important
Making Responsible Commitments - 1

Preparation

The commitment must be explicitly defined and estimated
All of those who are involved should participate

Agreement

Between two parties
Outcome determined by negotiation skill and relative power
Performance

Unwritten law of technology - all surprises involve more work
Reassess when things go wrong and learn to make a better commitment next time
Commitment Hypnosis

People convince themselves that what they want to happen must happen.

A technical team that has gotten itself into trouble will rarely get itself out without help.

Manager’s role: Watch for signs of over-commitment and seek independent advice to balance the optimists.
Dealing with time to market pressures

Commitment discipline is crucial

Don’t expect people to commit to what they can’t do

Manager’s role: support your team members when they have made all efforts to improve the schedule, but management wants to gamble on something better
Changing Commitments

Time to change an existing plan
People lose heart and begin to slack off
Status is hard to define
Checkpoints are not crisp

Manager’s role
Understand current situation
Only then make a new plan
Trust and the Commitment Ethic

Define and document intergroup commitments and eliminate them when they are no longer needed.

Manager’s role: make sure people communicate openly and freely to avoid mistrust.
Commitment Ownership

Person who makes the commitment should feel responsible to meet it

Manager’s role
   Involve people in making the commitment
   Ask for their help
Importance of Professionalism - 1

Key elements

Knowledge of what to do
Discipline to do it

Fundamental principles

Knowledge of what others have learned
Discipline to build on this knowledge
Don’t reinvent the wheel
Importance of Professionalism - 2

What to do when people know how to do good work but are not doing it?

Manager’s role: set the standards and insist that they be met

After all, if you don’t, no one else will
Visibility

“It is hard to do superior work, and it is almost impossible to do it in secret.”

It gives professionals extra motivation to do thorough work.

Manager’s role: encourage people to write a paper, make a presentation, or teach a course

Source: Watts Humphrey
Seven steps that managers can take

- Ask people what they know about the work of other groups
- Send copies of interesting articles
- Review professional history when considering promotion
- Highlight professional accomplishments when announcing promotions
- Celebrate outstanding contributors
- Invite key people to give presentations at technical meetings
- Set a professional tone for the organization
Respect for the Individual - 1

Three criteria for excellent work by professionals

Interested in their jobs
Motivated to succeed
Confident of their role in the organization
Employees attitudes
Single most important factor: manager’s behavior

Steps to take
Respect their need for personal value
Make sure employees have clearly defined goals
Respect their role in achieving them
Demonstrate respect and earn trust
Make sure that employees feel their interests parallel yours
Couple mutually trusting relationship with challenging work to make job truly exciting
Respect for the Individual - 3

Elements of respect

Manager’s attitude of fairness
Open communication
Timely truthfulness
Getting more and better information
More say in decisions that affect them
Greater chance for recognition and promotion
Respectful environment

Every decision is carefully explained
An interest is publicly shown for employees’ concerns
Several ways should be provided for people to express their concerns
Open door policy - ensure every employee the right to communicate with senior management through a channel that is independent of the immediate supervisor
Summary

One does not “manage” people; the task is to lead people

The most important role of technical leadership is to set goals and meet them unswervingly

Need for rational management based on trust

There are three special issues for managers of technical people

Commitment ethic, professionalism, respect for the individual
Motivating and Developing Professionals
Class Discussion

What are some characteristics of highly motivated technical professionals?
Motivating and Developing Professionals - Overview

Work assignment
Motivating technical people
Situational leadership
Professional discipline
Award and recognition
Work Assignment - 1

“The best engineers and scientists don’t work for a company, a university, or a laboratory; they really work for themselves”

Source: Watts Humphrey
Work Assignment - 2

Definition of happiness: striving for meaningful goals

Unhappy professionals rarely do their best work
Because of the professional’s need for unique achievement, managers need to carefully match people with their work assignments.

Most professionals intuitively understand their own talents and seek work that best suits them.
Even managers who can sense this match should get people to “sign up”

Success in matching talents to assignments depends on convincing engineers to voluntarily do the job
“Motivation is what makes people persist when they run into serious roadblocks. Success in almost any field is governed by both knowledge and perseverance, and those who give up too easily rarely succeed. In modern technology ideas are cheap; the crucial factor is the ability to couple ideas with the right combination of skill and perseverance. It is not as important to have the right ideas as it is to have the drive and motivation to make your ideas right.”

Watts Humphrey
Motivation Theories - 1

Maslow’s hierarchical theory (1954)

<table>
<thead>
<tr>
<th>Needs</th>
<th>Means</th>
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<tbody>
<tr>
<td>1. Physiological</td>
<td>▪ Adequate salary</td>
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<td></td>
<td>▪ Comfortable working conditions</td>
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<tr>
<td>2. Safety</td>
<td>▪ Medical insurance</td>
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<td></td>
<td>▪ Guaranteed compensation</td>
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<td></td>
<td>▪ Retirement plan</td>
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<td></td>
<td>▪ Safe working conditions</td>
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<td></td>
<td>▪ Job security</td>
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<tr>
<td>3. Social</td>
<td>▪ Employee interaction</td>
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<td></td>
<td>▪ Professional friendships</td>
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### Maslow’s hierarchical theory

<table>
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<tr>
<th>Needs</th>
<th>Means</th>
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<tr>
<td>4. Esteem</td>
<td>▪ Promotions</td>
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<td></td>
<td>▪ Praise</td>
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<td></td>
<td>▪ Recognition</td>
</tr>
<tr>
<td></td>
<td>▪ Job title</td>
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<tr>
<td>5. Self-actualization</td>
<td>▪ Opportunities for achievement</td>
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<tr>
<td></td>
<td>▪ Encouragement of creativity</td>
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<tr>
<td></td>
<td>▪ Chance for advancement</td>
</tr>
<tr>
<td></td>
<td>▪ Autonomy</td>
</tr>
<tr>
<td></td>
<td>▪ Challenging job</td>
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Source: [http://www.np.edu.sg/~adp-aitac/TOPIC5/sub4a1.htm](http://www.np.edu.sg/~adp-aitac/TOPIC5/sub4a1.htm)
Motivation Theories - 3

X-Y theory (Douglas McGregor, 1960)

Theory X assumes
- People inherently dislike work
- People must be controlled to do work and to achieve objectives
- People prefer to be directed

Theory Y assumes
- People view work as being as natural as play and rest
- People will exercise self-direction and self-control towards achieving objectives they are committed to
- People learn to accept and seek responsibility
Motivation Theories - 4

Three-needs theory (David McClelland, 1961)

1. Need for achievement – achievement, personal responsibility, feedback, moderate risk
2. Need for power – influence, competition
3. Need for affiliation – acceptance and friendship, cooperation
Expectancy theory (Victor Vroom, 1964)

An individual will act in a certain way based on the expectation that the act will be followed by a given outcome and on the attractiveness of the outcome to the individual.

Three expectations are

- **Effort - Performance linkage** (How hard will I have to work)
- **Performance - Reward linkage** (What is the reward)
- **Attractiveness** (How attractive is the reward)
Equity theory (J. Stacey Adams, 1965)

Individuals compare their job’s input/outcome ratio with those of others.

If they sense any inequity they will act to correct it by:
- Lower productivity
- Reduced quality
- Increased absenteeism
- Voluntary resignation
Goal-setting theory (E. A. Locke, 1984)

The process of developing and setting specific work goals and targets for employees to accomplish

Specific goals increase performance

Difficult goals, when accepted, result in higher performance than easy goals
Herzberg’s hygiene factors (1966)

Motivators will increase the job satisfaction
Hygiene factors are those whose absence can create job dissatisfaction

<table>
<thead>
<tr>
<th>Motivator</th>
<th>Hygiene factors</th>
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<tbody>
<tr>
<td>Achievement</td>
<td>Supervision</td>
</tr>
<tr>
<td>Recognition</td>
<td>Company policy</td>
</tr>
<tr>
<td>Work itself</td>
<td>Working conditions</td>
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<tr>
<td>Responsibility</td>
<td>Salary</td>
</tr>
<tr>
<td>Advancement</td>
<td>Peer relationship</td>
</tr>
<tr>
<td>Growth</td>
<td>Security</td>
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Source: [http://choo.fis.utoronto.ca/FIS/Courses/LIS1230/LIS1230sharma/motive3.htm](http://choo.fis.utoronto.ca/FIS/Courses/LIS1230/LIS1230sharma/motive3.htm)
Money and motivation

Money alone does not motivate to perform

Satisfaction with money is a “hygiene factor”

“What motivates technical professionals is what motivates volunteers, who have to get more satisfaction from their work than paid employees, precisely because they do not get a paycheck.”

Peter Drucker
Integrated Framework of Motivation
Technical competence generally grows throughout career and is a constantly expanding asset.

As professionals gain competence, they do not necessarily gain motivation.
Motivation and Technical Competence - 2

Motivation declines as professionals gain experience

Motivation is slow to develop and can be destroyed in an instant

Motivation is fragile; it depends on the person, task, environment, and immediate associates

Immediate manager controls all non-technical elements of motivation
If managers always treat all of their people the same way they will be wrong at least some of the time.

Truth is not all people are highly motivated and no one, not even the highly motivated is uniformly energetic and hardworking.

Managers should be sensitive to the current needs of each of their people.
Situational Leadership

Building task maturity

Building relationship maturity

Building motivation
How do I do the job? What do you think of my work?

Here is how I’ll do the job. What do you think of my work?

Here is how I’ll do the job. What do you think of me?

How do I do the job? What do you think of me?

Relationship Maturity

Low

High

Task Maturity

Source: Humphrey, Watts, Managing Technical People, 1997

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Building Task Maturity

Task maturity deals with technical competence

It is built throughout an employee’s education and working career

As it develops, a manager should progressively increase
   – Complexity
   – Challenge of the person’s assignments
Building Relationship Maturity

Relationship maturity deals with attitudes towards job and management

Just because people are technically capable of doing a job doesn’t mean they can or will do it; it depends on their relationship maturity

Watch for symptoms of low relationship maturity
Building Motivation - 1

Different from enhancing competence

Technical skills retained indefinitely

Motivation is slower to develop and can be destroyed in an instant
Building Motivation - 2

Three ways managers antagonize or discourage employees

Overlook their achievement

Assign them uninteresting work

Unintentionally offend them
Building Motivation - 3

Four ways managers positively influence employee’s attitude

- Show frequent interest in their work
- Involve them in all decisions that affect them
- Recognize and respect each as an individual
- Give individuals reasonable control over how they do their jobs
Building Motivation - 4

Eight simple guidelines

1. Focus on the output, giving progressively more discretion on how to produce it
2. Hold frequent informal meetings to discuss their technical approach
3. Challenge them to set aggressive goals
4. Suggest avenues to explore rather than specific direction
Building Motivation - 5

Eight simple guidelines (cont’d)

5. Be enthusiastic about good work
6. Involve the most productive people in at least some non-project activities
7. Ask the most promising professionals to present their work to senior managers, customers, or outside professional groups
8. Require professionals to make the plans and estimates for their own work
Manage technical professionals as “partners”
Instead of managing the work, manage for performance
Start with definition of excellence
Follow up with definition of results
Professional Discipline

What is discipline?
The need for professional discipline
Professional discipline
Manager’s role in professional discipline
What Is Discipline?

Discipline
An activity, exercise, or a regimen that develops or improves skill

Professional Discipline
A way for professionals to improve their ability to practice their professions
The public is almost totally dependent on the capability of many skilled professionals

“Currently available reliability methods do not provide results in which confidence can be placed” – FAA Standard for Embedded Avionics Software
The growth of information technology (IT), added interconnectedness, and universal access have enabled hackers and would be terrorists to attack critical infrastructures worldwide.

“Wireless technology has the potential of enabling malicious code to jump off our computer networks and into our everyday lives in a way it never has before” – Antivirus Engineer
Projected growth in software security flaws

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Capture the lessons that generations of prior professionals have learned

Keep the professional’s work visible

It takes a great deal of time and dedication to develop
Professional Discipline - 2

Professional discipline is not a constraint for creativity

Without professional discipline, people will spend more time reinventing the wheel

Without professional discipline, people won’t have a solid base for using creativity

Professional discipline is based on the scientific foundation and standardized approach
Manager’s Role in Professional Discipline - 1

**Recruiting**: focus on the disciplines the professionals have learned

**Training**: when professionals don’t have the discipline, get them trained

**Tracking**: once trained, insist they apply what they have learned
Manager’s Role in Professional Discipline - 2

Reviewing: check the performance

Conducting postmortem: find what worked and what are the areas that need improvement
Professionals’ complaint: managers press for early deliveries and not interested in product quality

When managers only ask about schedules, they imply that the schedule is all that matters; they foster sloppy work

Rule of thumb: it takes longer to fix a defective product than it would have taken to build it right in the first place
Managers must insist that professionals rigorously apply the recognized disciplines of their field.

Professionals soon learn that disciplined work is more satisfying.

If managers don’t insist on applying professional discipline, nobody else will.
Building a Disciplined Organization

Skill-building
- Personal plans
- Practice in planning
- Planning methods
- Quality measures
- Defined processes

Team-building
- Commitment
- Aggressive plans
- Quality ownership
- Project goals
- Plan ownership
- Plan detail
- Team roles
- Team resources

Team-working
- Quality priority
- Cost of quality
- Follow the process
- Review status
- Review quality
- Communication
- Change management

Engineering Disciplines

Team Disciplines

Management Disciplines

Integrated Product Teams

Source: Software Engineering Institute
Motivated Teams - 1

The team members are all skilled and capable of doing the job.

The team has an aggressive and important goal that the members must all cooperatively accomplish.

The team members all believe the goal is achievable and they each have a defined role in achieving that goal.
Motivated Teams - 2

The team members have a common process and plan that guides them in doing the work and in tracking their progress.

The team leader supports and protects the team and keeps all team members informed on team progress.
Award and Recognition

Recognition program

Award program and guidelines
Recognition Program

Basic idea: reward significant achievements as promptly as possible

Even minor advances should be recognized in some way

Recognition can have many different forms

Recognition can be formal or informal
Achievement should be clear, significant, and worthy of special recognition; must be reasonably consistent with other awards for similar achievements.

When recognizing managers, do not imply that engineers and designers do the work and managers get the rewards.

Give awards in public with plenty of publicity.
Recognize team success as well as individual contributions

Be aware of losing focus: don’t let the rewards and recognition become the objectives

Never give awards before the achievement has actually been completed
Summary

The best people work for themselves

Motivation is fragile

Build task maturity, relationship maturity

Insist on professional discipline

Be flexible in management styles
Teamwork
Class Discussion

What are some characteristics of superior teams?
What is a Team?

Group of people working towards a common end
Jelled Team

“A jelled team is…greater than the sum of its parts… and the enjoyment people derive from the work is greater than you would expect.”

*Peopleware*, DeMarco and Lister

“Jelled teams are the most powerful tool ever devised for doing challenging work”

Watts Humphrey
Building Effective Teams With TSPSM/PSPSM

**Engineering Disciplines**
- Personal plans
- Practice in planning
- Planning methods
- Quality measures
- Defined processes

**Team Disciplines**
- Commitment
- Aggressive plans
- Quality ownership
- Project goals
- Plan ownership
- Plan detail
- Team roles
- Team resources

**Management Disciplines**
- Quality priority
- Cost of quality
- Follow the process
- Review status
- Review quality
- Communication
- Change management

Integrated Product Teams

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Source: Software Engineering Institute

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Building Task Maturity with PSP

PSP0
- Current process
- Time recording
- Defect recording
- Defect type standard

PSP0.1
- Coding standard
- Size measurement
- Process improvement proposal (PIP)

PSP1
- Size estimating
- Test report

PSP1.1
- Task planning
- Schedule planning

PSP2
- Code reviews
- Design reviews

PSP2.1
- Design templates

PSP3
- Cyclic development

Team Software Process
- Requirements
- Configuration management

- scaling up PSP methods to larger projects
- defect and yield management
- size, resource, and schedule plans
- establishing a measured performance baseline

Source: Software Engineering Institute
Building Relationship Maturity with TSP

**Day 1**
1. Establish product and business goals
2. Assign roles and define team goals
3. Produce development strategy

**Day 2**
4. Build top-down and next-phase plans
5. Develop the quality plan
6. Build bottom-up and balanced plans

**Day 3**
7. Conduct risk assessment
8. Prepare management briefing and launch report
9. Hold management review

**Launch postmortem**

**Day 4**
9. Hold management review
_new teams: TSP process review_

Source: Software Engineering Institute
“Acting responsibly can seem risky. In fact it is the least risky alternative…. Every day that you wait to act is a day you can not use to solve the problem. In fact, there are two unwritten laws of software and technology. One is that a project gets to be one year late one day at a time. The other is that surprises always cause more work to be done. So, act responsibly in everything you do.”

Watts Humphrey
TSP / PSP
Being Responsible

Planned v/s Actual Earned Value

- Planned Value
- Earned Value

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“What people overlook is that when schedule becomes the only goal, people forget that they need to deliver a product that works and meets customer requirement.”

Watts Humphrey
## TSP / PSP

### Striving for Defined Goals

<table>
<thead>
<tr>
<th>No</th>
<th>Goal</th>
<th>Measure</th>
<th>Plan</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Develop a product with superior quality</td>
<td>Post delivery defects/KLOC</td>
<td>Zero</td>
<td>Zero</td>
</tr>
<tr>
<td>2</td>
<td>Deliver product on committed schedule</td>
<td>% Schedule deviation from plan</td>
<td>&lt;5%</td>
<td>22%</td>
</tr>
<tr>
<td>3</td>
<td>Engineers achieve quality goals</td>
<td>No. Of PSP components with zero system test defects</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Remove defects early through appraisal</td>
<td>% Of defects removed in appraisal rather than failure phases</td>
<td>&gt;75%</td>
<td>88%</td>
</tr>
</tbody>
</table>
“What was once considered excellent no longer is. This means that we must continually focus on improving our personal capabilities.”

Watts Humphrey
TSP / PSP
Commitment to Excellence

© 2000 by the Institute of Electrical and Electronics Engineers, Inc. Source IEEE Software Nov/Dec 2000
TSP/PSP Performance Feedback Evaluation

Number of TSP Team Members

- Commendable
- Superior
- Between Superior - Outstanding
- Outstanding
## The Executive Transformation - 1

<table>
<thead>
<tr>
<th>Pre-TSP</th>
<th>TSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>“If we don’t meet the customer’s schedule expectations, we will lose the business”</td>
<td>“Show me a plan to meet customer’s aggressive schedule. I will not commit you to a date you can’t meet”</td>
</tr>
<tr>
<td>“I will gamble on a vague promise”</td>
<td>“We will win with a firm commitment based on a plan”</td>
</tr>
<tr>
<td>“I will tell you what must happen”</td>
<td>“Let us analyze the data and determine what will happen”</td>
</tr>
</tbody>
</table>
### The Executive Transformation - 2

<table>
<thead>
<tr>
<th>Pre-TSP</th>
<th>TSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Where are you on the schedule?”</td>
<td>“How is the quality in reviews, inspections, and test?”</td>
</tr>
<tr>
<td>“What have you done for me lately?”</td>
<td>“What are you learning today that will help us to meet future challenges?”</td>
</tr>
<tr>
<td>“I will authorize overtime”</td>
<td>“Have fun doing this project”</td>
</tr>
</tbody>
</table>

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What does “FUN ON THE JOB” Mean to you?