Managing Technical People
Half Day Tutorial
CMMI Technology Conference
November 15, 2004

Managing Technical People for Project Managers - Lecture 1

# Introduction and Course Overview

MTP 2

# 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?

# Project Management Issues - 1

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

# Project Management Issues - 2

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.

# Project Management Issues - 3

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

# Why Are We Here? - 1

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

# Why Are We Here? - 2

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

# Why Are We Here? - 3

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$^{SM}$ and Personal Software Process$^{SM}$ provide the management framework to build and manage superior technical teams

# Agenda

| | |
|---|---|
| Introduction | 10 |
| Managing Yourself | 50 |
| The Manager as Leader | 30 |
| Break | 30 |
| Motivating and Developing Professionals | 45 |
| Teamwork | 45 |

# 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

# Summary - 2

## 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

# Summary - 3

"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

# Leadership Development - 1

## 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:

Cherish 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

# Reasons for Taking Charge - 2

**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"

# Reasons for Taking Charge - 3
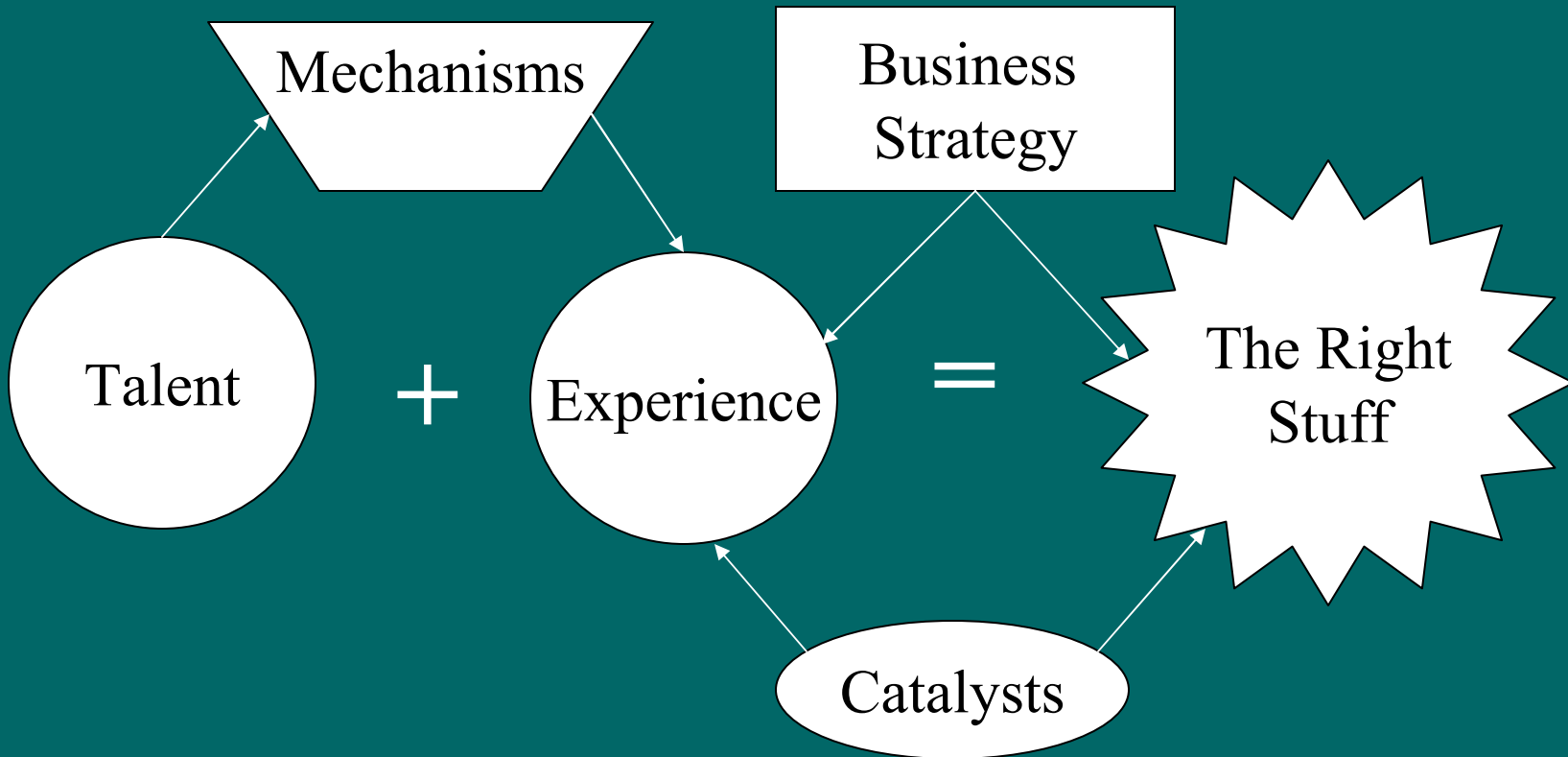
**Seven Reasons for Taking Charge**

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.
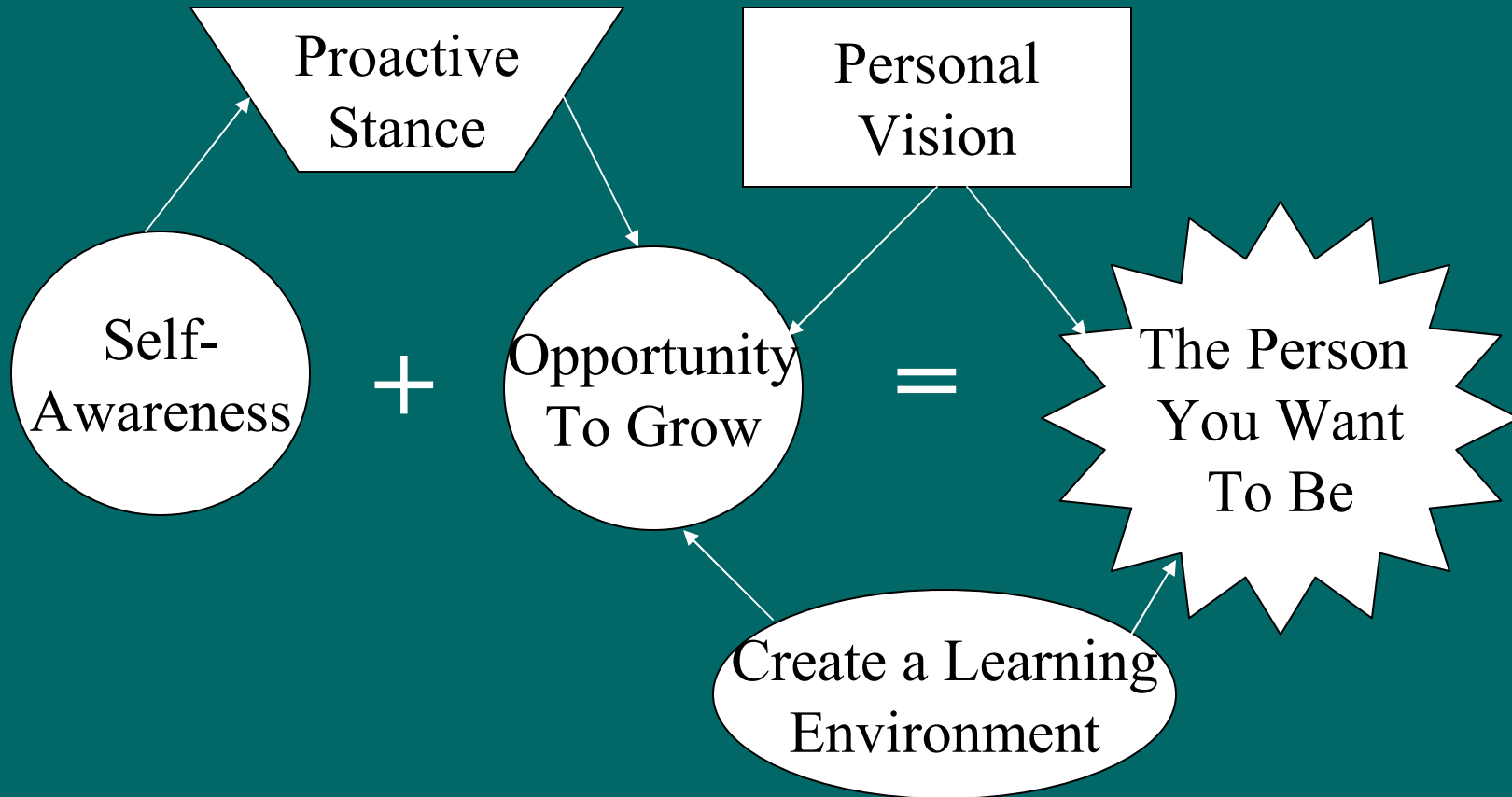
# Reasons for Taking Charge - 4

**SQI**

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



Mechanisms

Business Strategy

Talent + Experience = The Right Stuff

Catalysts

*Source: Morgan McCall, Jr, "High Flyers"*

# A Model for Self-development



Proactive Stance

Personal Vision

Self-Awareness

+

Opportunity To Grow

=

The Person You Want To Be

Create a Learning Environment

*Source: Morgan McCall, Jr, "High Flyers"*

# 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?

# Being Pro-active - 2

**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

# Being Pro-active - 3

**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

# Being Pro-active - 4

**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

# Being Pro-active - 5

**SQI**

## 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

# Being Pro-active - 6

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

## Being responsible

"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

# Being Pro-active - 8

**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

# 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

| Sources of Success | The Darker Side |
|---|---|
| Track Record | Can be in a narrow technical field; may be due to others; may have moved up too fast |
| Brilliance | Can be intimidating to others; may devalue others' ideas and contributions |

# The Paradox of Triumph and Disaster - 2

| Sources of Success | The Darker Side |
|---|---|
| Commitment | Defining whole life in terms of work and expecting others to do the same |
| Charm | Using charm to selectively manipulate other people |

# The Paradox of Triumph and Disaster - 3

| Sources of Success | The Darker Side |
|---|---|
| Ambition | Doing whatever is necessary to achieve personal success |

| Competency | Potential Dark Side |
|---|---|
| Team Player | Not a risk taker, indecisive, lacks independent judgment |
| Customer-focused | Can't create breakthroughs, can't control costs, unrealistic, too conservative |
| Biased toward action | Reckless, dictatorial |

# The Paradox of Triumph and Disaster - 5

| Competency | Potential Dark Side |
|---|---|
| Analytic Thinker | Analysis paralysis, afraid to act, inclined to create large staffs |
| Has Integrity | Holier than thou attitude, rigid, imposes personal standards on others, zealot |
| Innovative | Unrealistic, impractical, wastes time and money |

# The Paradox of Triumph and Disaster - 6

| Competency | Potential Dark Side |
|---|---|
| Has Global Vision | Misses local markets, over-extended, unfocused |
| Good with People | Soft, can't make tough decisions, too easy on people |

# Develop a Personal Vision - 1

**SQI**

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

# Develop a Personal Vision - 2

## 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

# Develop a Personal Vision - 4

Part 3, Reconciling Parts1 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

# How You Can Get There

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

# 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*

# Setting Goals - 1

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

# Setting Goals - 2

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.

# Rational Management - 1

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

# Rational Management - 2

**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

# Making Responsible Commitments - 2

## 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

# Managing Commitments

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

# Importance of Professionalism - 3

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*

# Importance of Professionalism - 4

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

# Respect for the Individual - 2

**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

**SQI**

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

# Respect for the Individual - 4

**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

Managing Technical People for Project Managers – Lecture 4

# 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

# Work Assignment – 3

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

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# Work Assignment – 4

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

# Motivating Technical People

Motivation theories

Motivation and technical competence

# Why Motivation Is Needed

"*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

**SQI**

## Maslow's hierarchical theory (1954)

| Needs | Means |
|---|---|
| 1. Physiological | ▪ Adequate salary<br>▪ Comfortable working conditions |
| 2. Safety | ▪ Medical insurance<br>▪ Guaranteed compensation<br>▪ Retirement plan<br>▪ Safe working conditions<br>▪ Job security |
| 3. Social | ▪ Employee interaction<br>▪ Professional friendships |

# Motivation Theories - 2

## Maslow's hierarchical theory

| Needs | Means |
|---|---|
| 4. Esteem | ▪ Promotions<br>▪ Praise<br>▪ Recognition<br>▪ Job title |
| 5. Self-actualization | ▪ Opportunities for achievement<br>▪ Encouragement of creativity<br>▪ Chance for advancement<br>▪ Autonomy<br>▪ Challenging job |

*Source: 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

# Motivation Theories - 5

## 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)

# Motivation Theories - 6

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

# Motivation Theories - 7

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

| Motivator | Hygiene factors |
|---|---|
| Achievement | Supervision |
| Recognition | Company policy |
| Work itself | Working conditions |
| Responsibility | Salary |
| Advancement | Peer relationship |
| Growth | Security |

*Source: http://choo.fis.utoronto.ca/FIS/Courses/LIS1230/LIS1230sharma/motive3.htm*

# Motivation Theories - 9

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
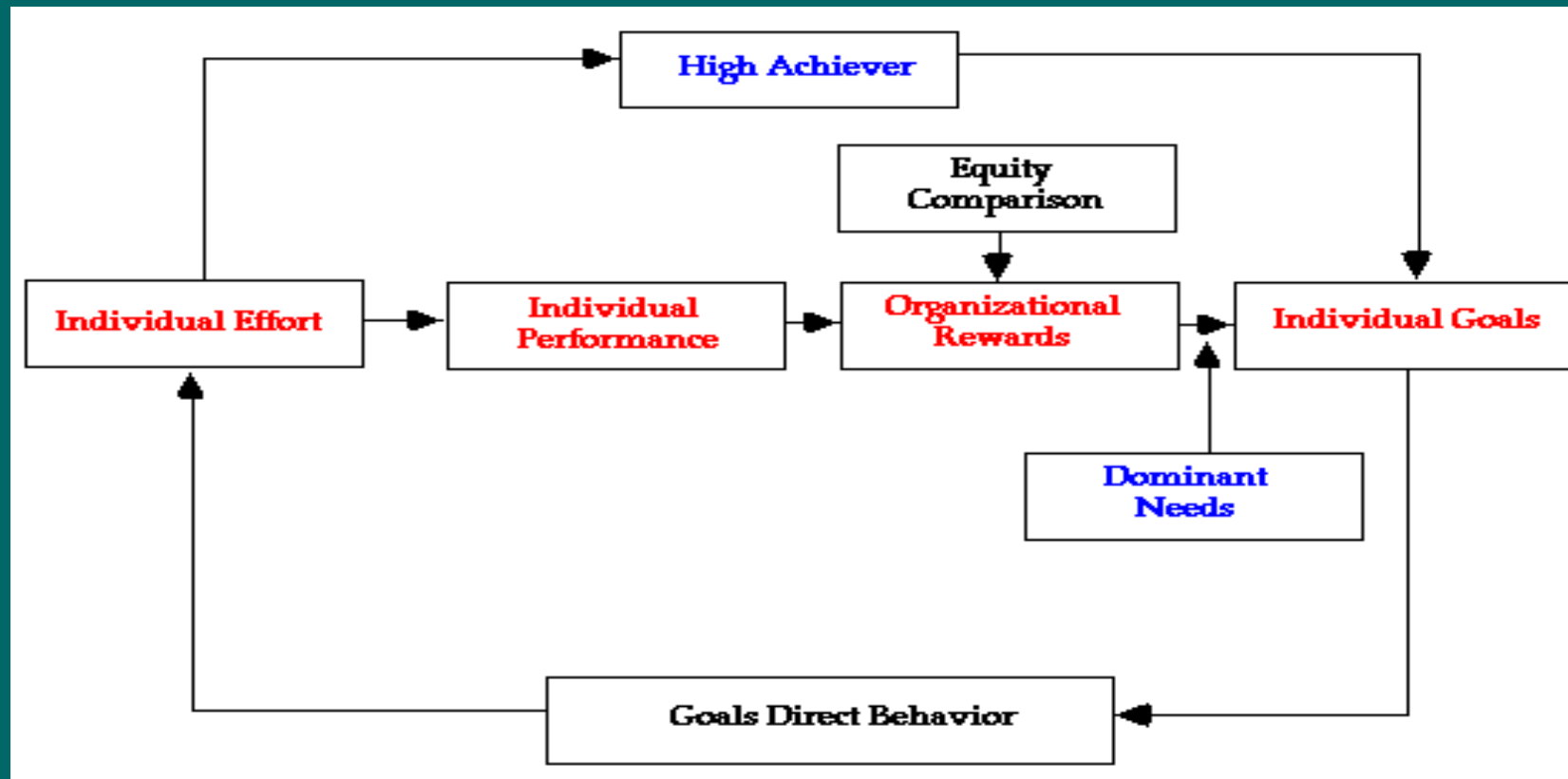
# Motivation and Technical Competence - 1

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

# Motivation and Technical Competence - 3

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

**SQI**

| | | |
|---|---|---|
| **Relationship Maturity** | **High** | **3**<br>How do I do the job? What do you think of my work? | **4**<br>Here is how I'll do the job. What do you think of my work? |
| | **Low** | **1**<br>How do I do the job? What do you think of me? | **2**<br>Here is how I'll do the job. What do you think of me? |
| | | Low | High |

**Task Maturity**

Source: Humphrey, Watts, Managing Technical People, 1997

# 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

# Building Motivation - 6

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 Need for Professional Discipline - 1

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 Need for Professional Discipline - 2

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

**Forbes (06/10/02) Vol. 169, No. 13, P. 125; Goldman, Lea**
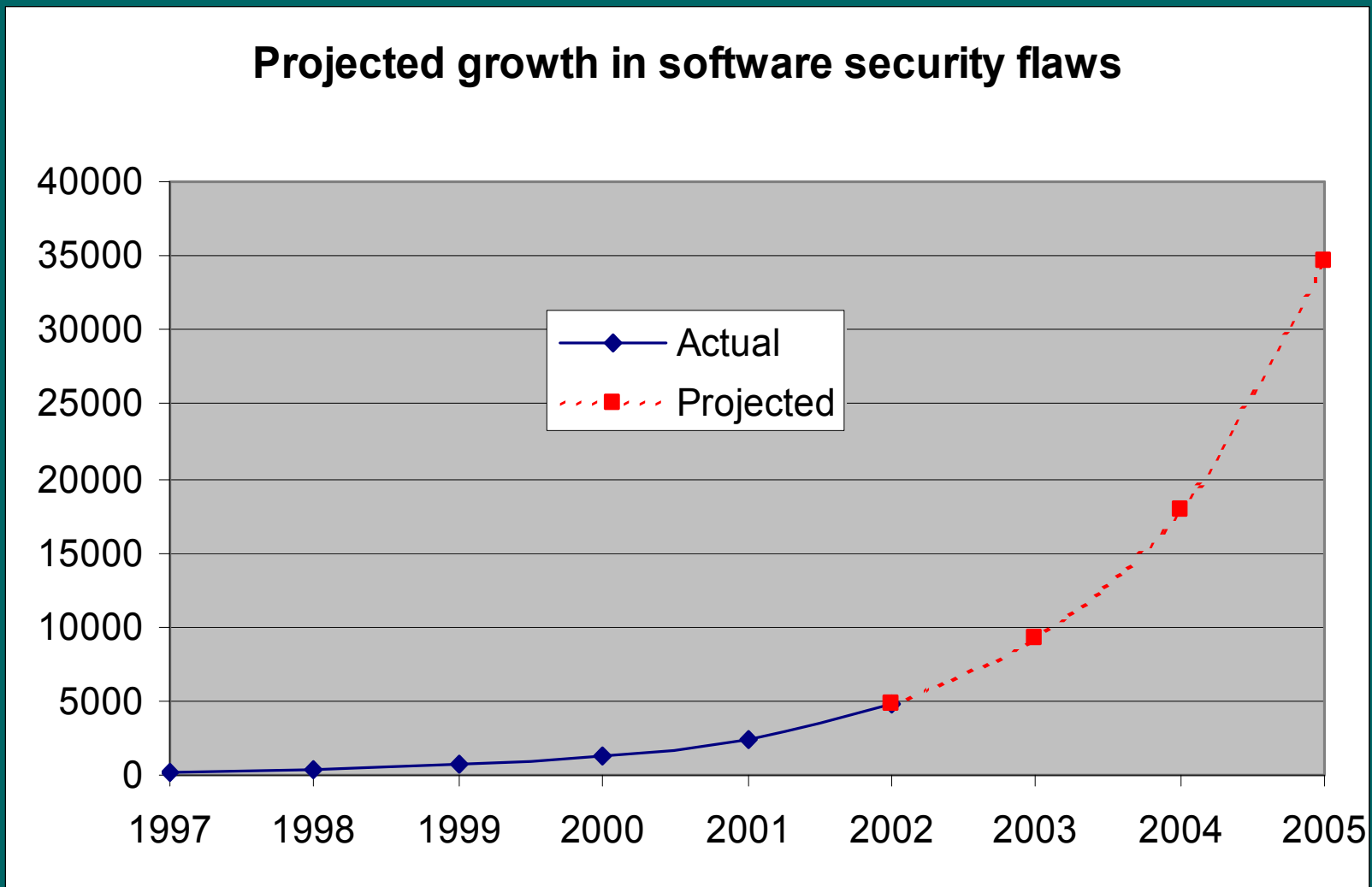
# Professional Discipline - 1

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

# Manager's Role in Professional Discipline - 3

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

# Manager's Role in Professional Discipline - 4

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

# Award Program and Guidelines - 1

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

# Award Program and Guidelines - 2

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

Managing Technical People for Project Managers – Lecture 5

# Teamwork

# Class Discussion

What are some characteristics of superior teams?

# What is a Team?

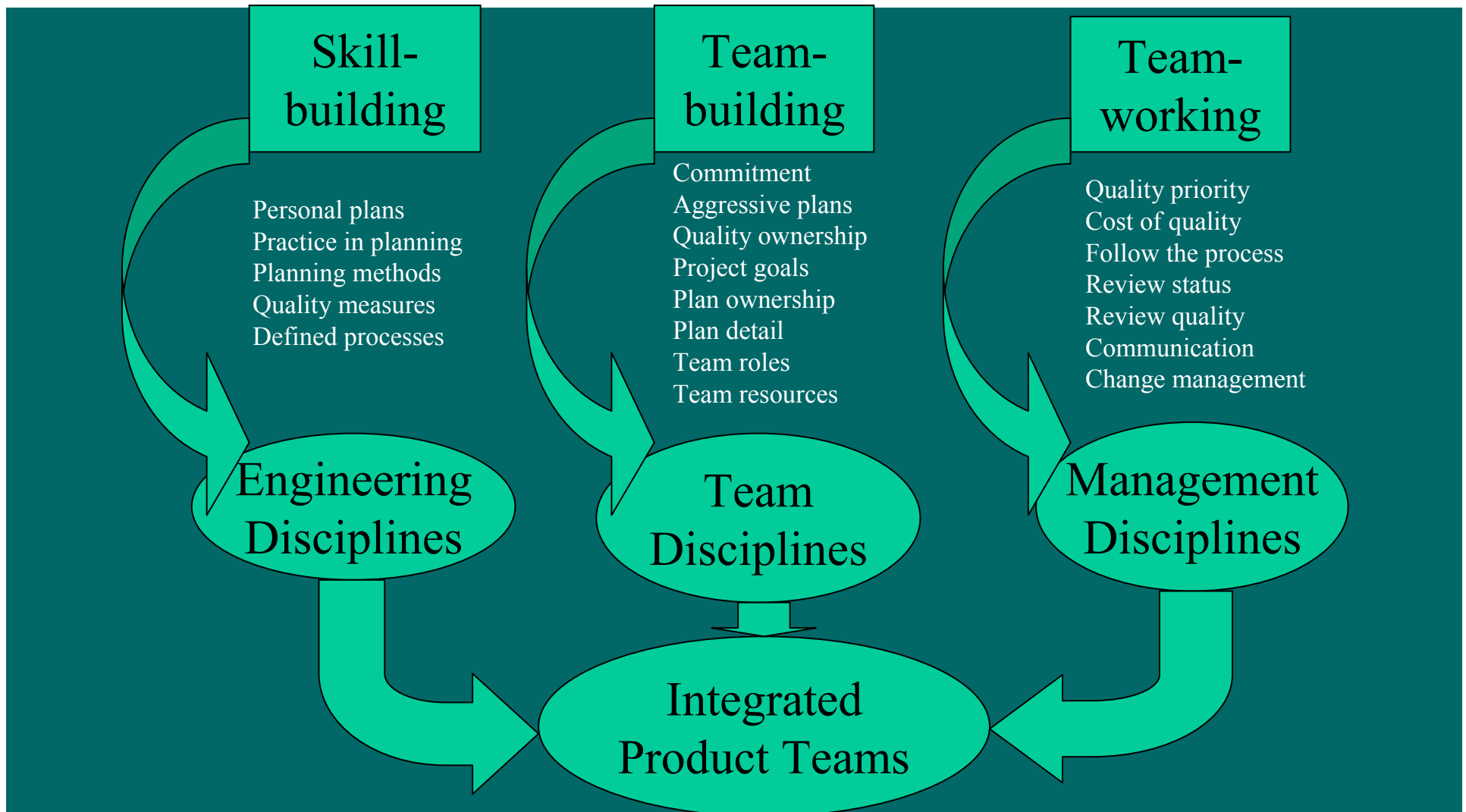Group of people working towards a common end

# 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 TSP$^{SM}$/PSP$^{SM}$

**Skill-building**

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

**Engineering Disciplines**

**Team-building**

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

**Team Disciplines**

**Team-working**

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

**Management Disciplines**

**Integrated Product Teams**

MTP 143

Source: Software Engineering Institute

# Building Task Maturity with PSP

**Team Software Process**
Requirements
Configuration management

**PSP3**
Cyclic development

scaling up PSP methods to larger projects

**PSP2**
Code reviews
Design reviews

**PSP2.1**
Design templates

defect and yield management

**PSP1**
Size estimating
Test report

**PSP1.1**
Task planning
Schedule planning

size, resource, and schedule plans

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

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

establishing a measured performance baseline

MTP 144

Source: Software Engineering Institute

# Building Relationship Maturity with TSP
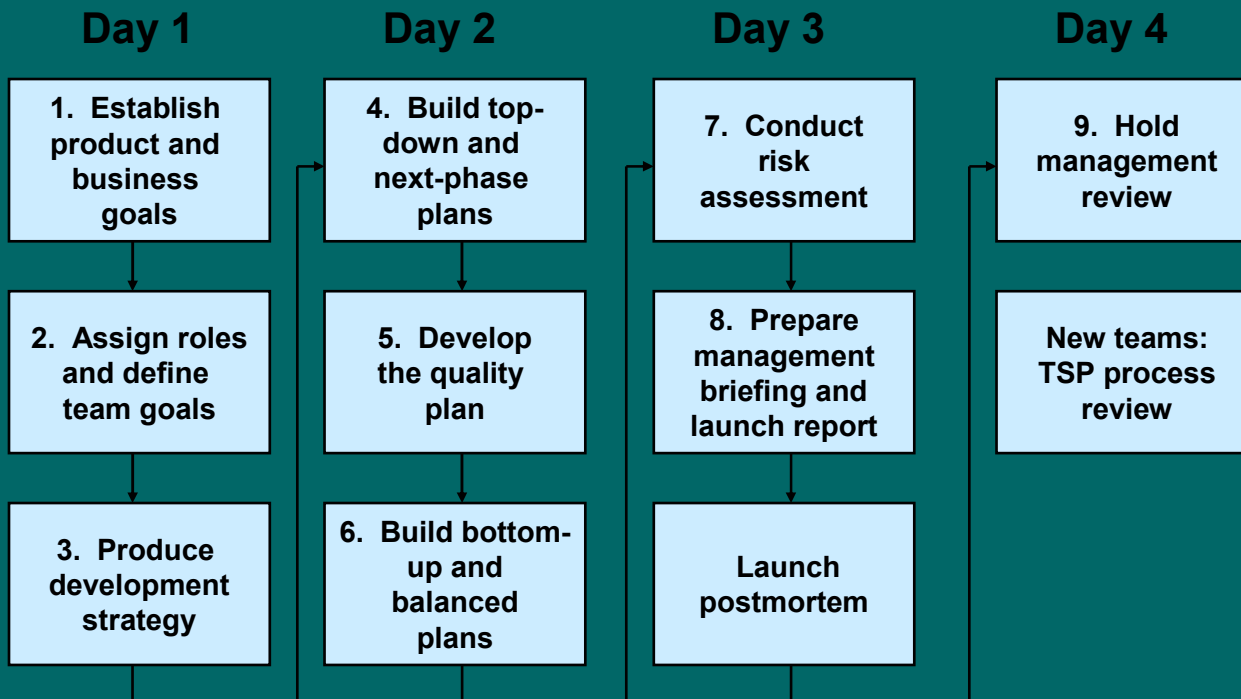
**Day 1**

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

Launch postmortem

**Day 4**

9. Hold management review

New teams: TSP process review

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Source: Software Engineering Institute

MTP 145

# Self Management – Being Responsible

"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."
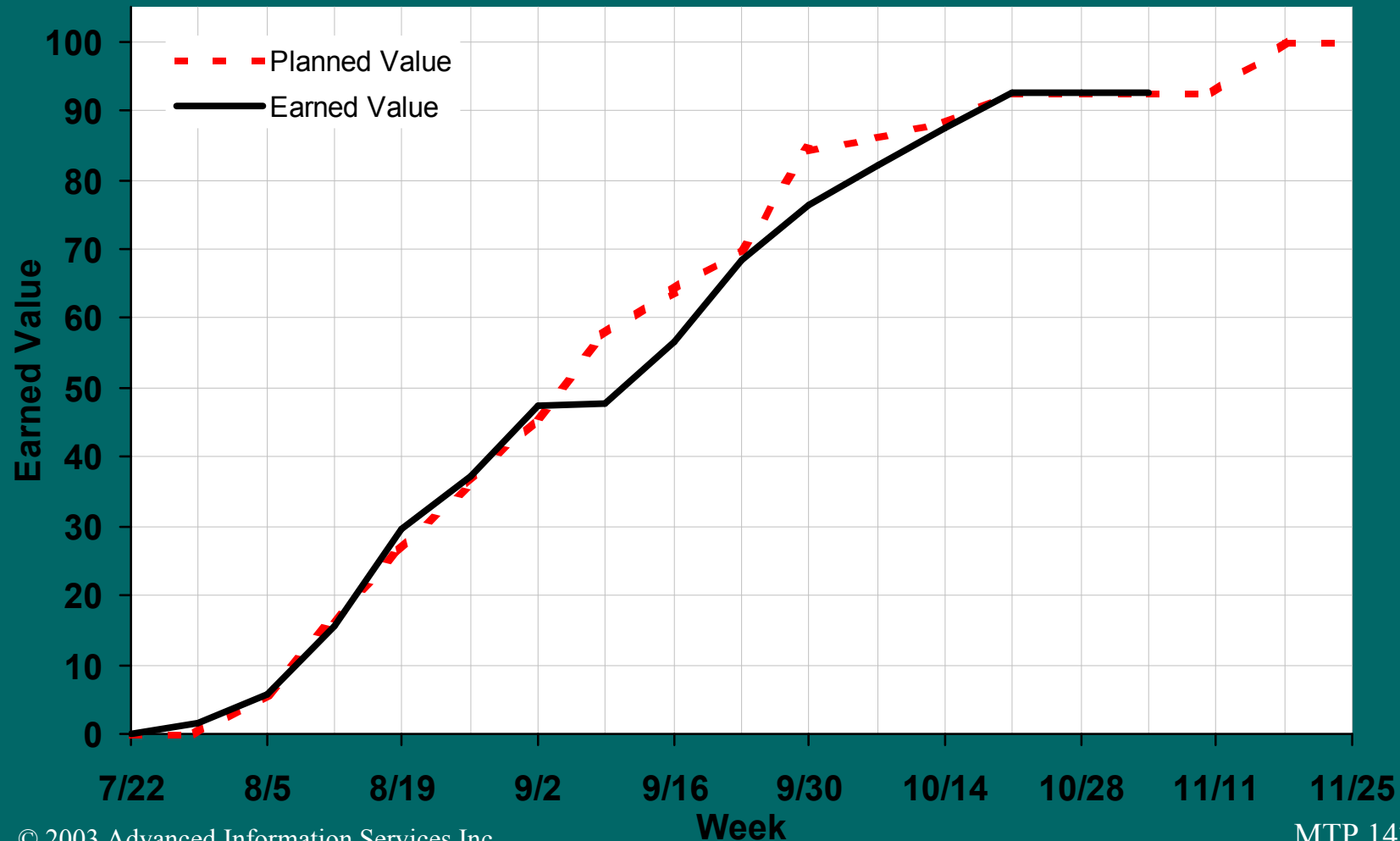
Watts Humphrey

# TSP / PSP
# Being Responsible



**Planned v/s Actual Earned Value**

MTP 147

# Self Management
# 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

# TSP / PSP
# Striving for Defined Goals

| No | Goal | Measure | Plan | Actual |
|---|---|---|---|---|
| 1 | Develop a product with superior quality | Post delivery defects/KLOC | Zero | Zero |
| 2 | Deliver product on committed schedule | % Schedule deviation from plan | <5% | 22% |
| 3 | Engineers achieve quality goals | No. Of PSP components with zero system test defects | 25 | 20 |
| 4 | Remove defects early through appraisal | % Of defects removed in appraisal rather than failure phases | >75% | 88% |

# Self Management
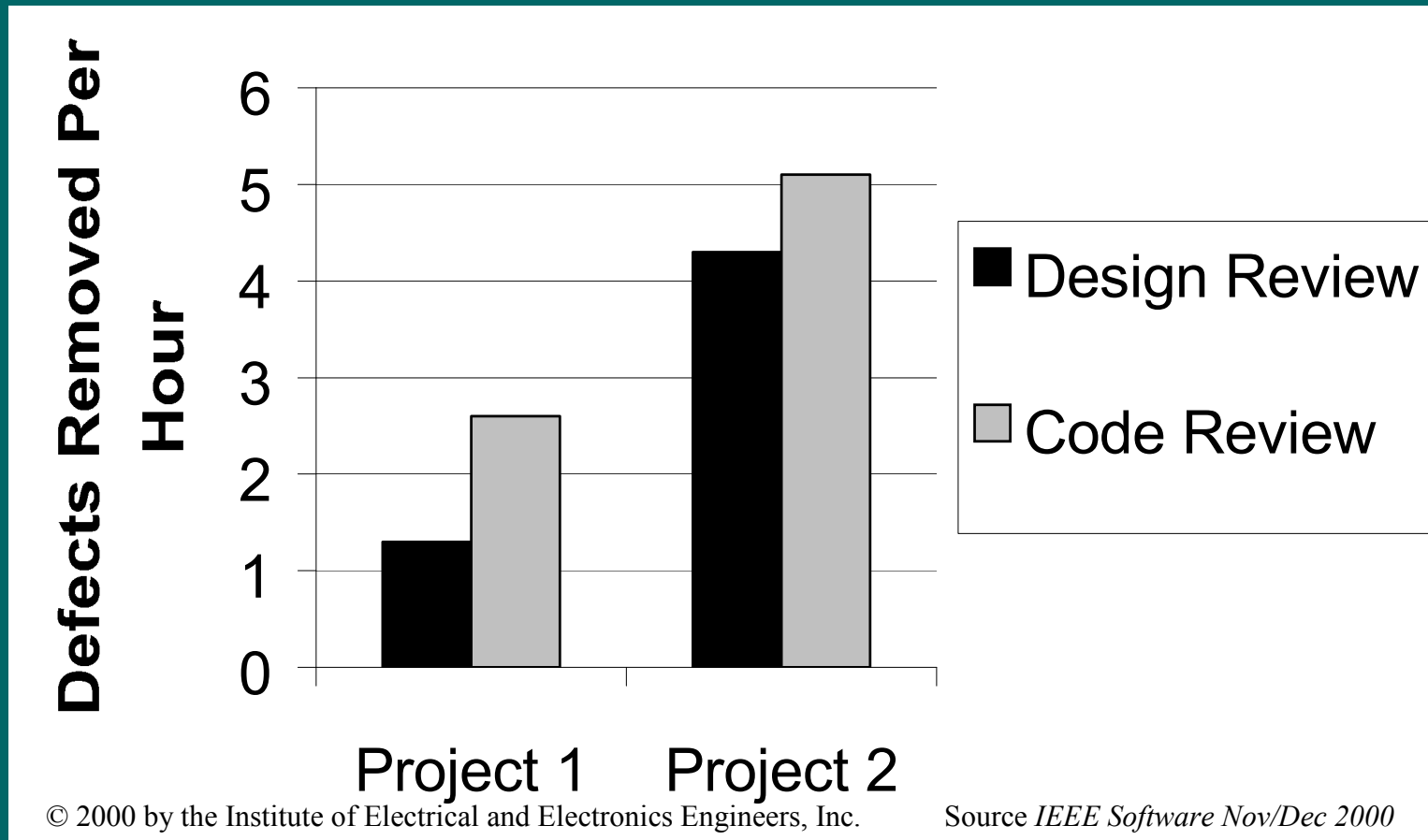# Commitment to Excellence

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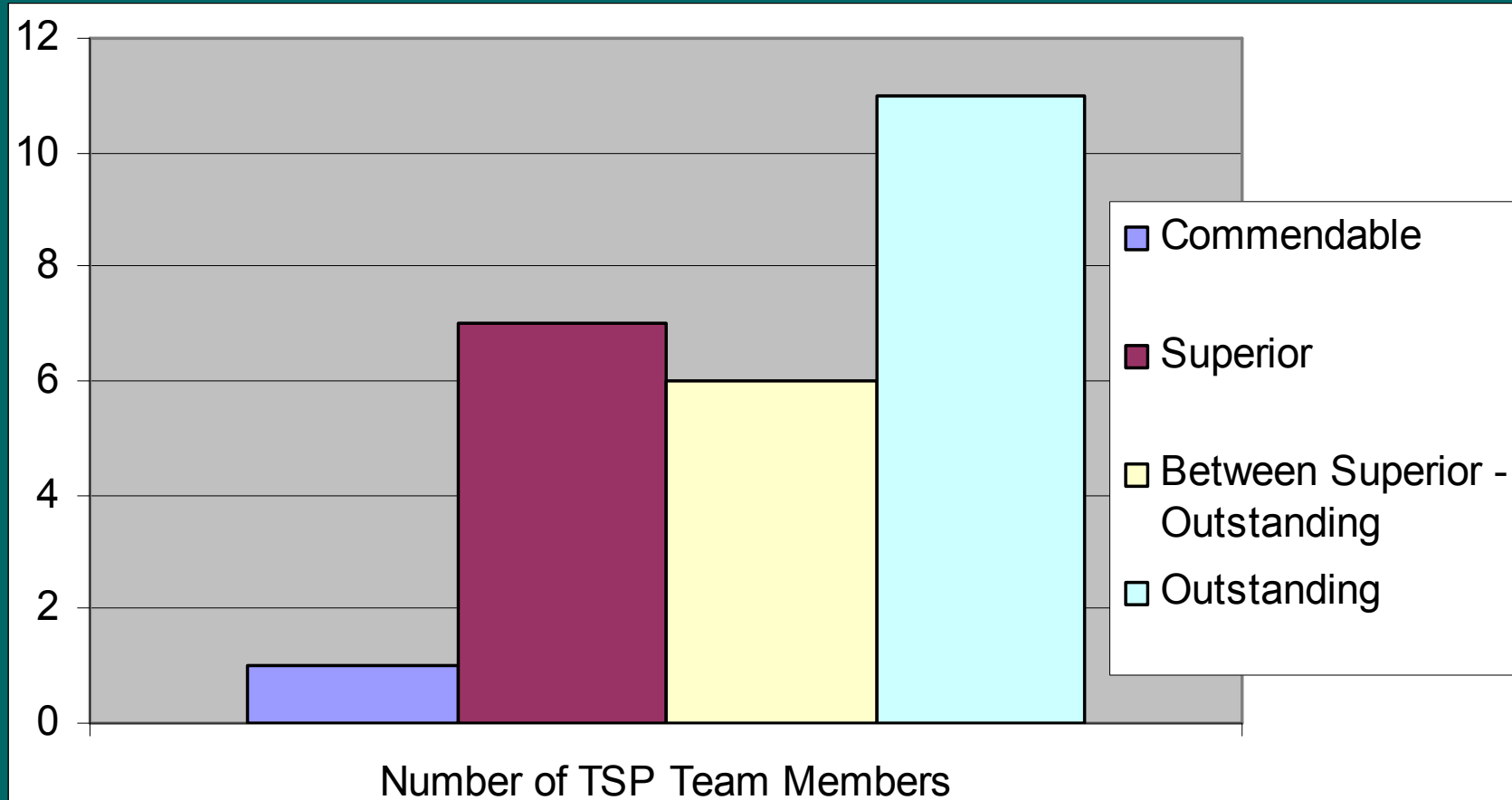
Watts Humphrey

# 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

# The Executive Transformation - 1

| Pre-TSP | TSP |
|---|---|
| "If we don't meet the customer's schedule expectations, we will lose the business" | "Show me a plan to meet customer's aggressive schedule. I will not commit you to a date you can't meet" |
| "I will gamble on a vague promise" | "We will win with a firm commitment based on a plan" |
| "I will tell you what must happen" | "Let us analyze the data and determine what will happen" |

# The Executive Transformation - 2

| Pre-TSP | TSP |
|---|---|
| "Where are you on the schedule?" | "How is the quality in reviews, inspections, and test?" |
| "What have you done for me lately?" | "What are you learning today that will help us to meet future challenges?" |
| "I will authorize overtime" | "Have fun doing this project" |

What does

"FUN ON THE JOB"

Mean to you?

# Managing Technical People
# for Project Managers

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