Software Team Management

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Objectives

➢ To build a software team

➢ To *manage* a software team

➢ To *motivate* software team members

➢ To prepare and make a *presentation*

➢ To *analyze* your management approach

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What Causes Project Failures? [1]

- For the overwhelming majority of the *bankrupt projects*, there was not a single *technological issue* to explain the failure.
- The major problems of our work are not so much technological as *sociological* in nature.
- The main reason we tend to focus on the technical rather than the human side of the work is not because it's more crucial, but because it's *easier* to do.

Peopleware can refer to anything that has to do with the role of people in the development or use of computer software and hardware systems, including such issues as developer productivity, teamwork, group dynamics, the psychology of programming, project management, organizational factors, human interface design, and human-machine-interaction.

Building a Software Team?

Steve Jobs
CEO, Apple

Timothy D. Cook
Chief Operating Officer

Scott Forstall
Senior Vice President
iPhone Software

Peter Oppenheimer
Senior Vice President and
Chief Financial Officer

Mark Papermaster
Senior Vice President
Devices Hardware Engineering

Philip W. Schiller
Senior Vice President
Worldwide Product Marketing

❖ Understand fully what the *team's role and goals* are.

❖ Analyze the *skills, experience and competencies* within your team, and start matching people to roles.

- If you work with A-level people, you will make A-level products.
- If you work with B-level people, you will make C-level products.
- If you work with C-level people, you will make failing products.

Ways to Guarantee the Failure

- Use a Technical Lead that has *never* built a similar system.
- Build the system in Java, even though most of the development team still thinks that *Java* is coffee.

When Will Your Team Get a Conflict? [3]

Celebrate its achievements.

Establish *process* and structure
Work to smooth conflict
Build good *relationships* between team members.

Help the team take *responsibility* for progress towards the goal.

Adjourning

Performing

Norming

Delegate as far as you sensibly can. Aim to have as "light a touch" as possible.

Storming

Forming

Establish *objectives* clearly.

Why Do We Get a Conflict?

IMPORTANT

No Communication!

- Formal meeting
- Informal meeting
- Paper report
- Phone call
- Conference call
- Email
- Instant messages
- Project management software

How to Conduct a Meeting?

➤ Target
  - Solving *problems*?
  - Making *decisions*?
  - Transferring *knowledge*, getting feedback, reporting?

➤ Responsibilities
  - Chairman
  - Secretary
  - *Attendees*

➤ Agenda preparation
➤ Timeframe preparation
➤ Content, data preparation

Meeting minutes
  o Who were *present*?
  o What are the *targets*?
  o What are the *decisions, resolutions*?
  o *Who* are responsible for doing the tasks?
  o *When* will decisions be effective?

Barriers to Effective Listening [2]

- *Considering* that the subject is uninteresting
- Evaluating the *speaker*, not the *subject*
- Becoming *emotionally involved*
- Listening for *facts*, not central *ideas*
- Avoiding *difficult* topics
- Too much *note taking*

Active Listening

- *Look* at the speaker directly
- Minimize external *distractions*
- Minimize internal distractions

- *Nod* occasionally, Murmur ("uh-huh" and "um-hmm")
- *Summarize* the speaker's comments periodically
- *Note* unclear information, disagreement

- Allow the speaker to *finish*
- *Ask* questions for clarification

Why Can't We Communicate?

- **Principle 1. *Listen*.**
- Principle 2. *Prepare* before you communicate.
- Principle 3. Someone should *facilitate the activity*.
- Principle 4. *Face-to-face* communication is best.
- Principle 5. Take notes and *document decisions*.
- Principle 6. Strive for *collaboration*.
- Principle 7. Stay *focused*; *modularize* your discussion.
- Principle 8. If something is unclear, *draw* a picture.
- Principle 9. (a) Once you agree to something, *move on*. (b) If you can't agree to something, *move on*. (c) If a feature or function is unclear and cannot be clarified at the moment, *move on*.
- Principle 10. Negotiation is not a contest or a game. It works best when *both parties win*.

Mind Map [10]

- A *mind map* is a form of an underline with ideas and pictures radiating out from a central concept.
- http://www.mindjet.com/

Concept Map [6]

- *Concept maps* are graphical tools for organizing and representing knowledge.
- They include *concepts*, usually enclosed in circles or boxes of some type, and *relationships* between concepts indicated by a connecting line linking two concepts.
- http://cmap.ihmc.us/download/

How Do You Coach Your Team Members?

Theory X [4]

- Theory X held that the most efficient way to get a job done was to do more and more precise time and motion studies, and to organize jobs into *well-orchestrated sequences* of tasks in which people were as efficient and predictable as machines.
- Management consisted of keeping the system running smoothly, largely through *coercion*.
- The Theory X was a poor long-term strategy because it *stunted* people's creativity, adaptiveness, and self esteem, making the people and their organizations unable to cope with change.

❖ People *don't like* to work.
❖ People are *irresponsible*.
❖ People prefer to be *controlled*, directed.

Theory Y

- Theory Y held that management should stimulate *creativity* and individual *initiative*. This led to organizations which were much more adaptive and personally satisfying.
- Theory Y created difficulties in dealing with *conflict*. This became a major concern in Theory Y organizations, with many individual initiatives competing for resources and creating problems of coordination.

❖ People *like* to work if conditions are favorable.
❖ People are *responsible*.
❖ People can be *self directed*, creative at work if properly motivated.

Theory Z

- Theory Z holds that much of the conflict resolution problem can be eliminated by up-front investment in developing *shared values* and arriving at major decisions by consensus.

WORKER
(bottom-up)
Estimate
Perform work
Supervise self
Report

MANAGER
(top-down)
Plan & schedule
Control work environment
Review progress

How Do We Share The Work? [5]

- Each segment of a large job is *tackled by a team*, but that the team be organized like a *surgical team* rather than a hog-butchering team.
- That is, instead of each member cutting away on the problem, *one does the cutting and the others give him every support* that will enhance his effectiveness and productivity.

The Surgical Team

How Can We Reach a Decision?

- Won't one get a better product (system design) by getting the good ideas from *all the team*, following a democratic philosophy, rather than by restricting the development of specifications to *a few*?
- The *conceptual integrity of a system* determines its ease of use.

Monarch   **Aristocracy**   **Democracy**

System Construction

What do the implementers do while waiting for the next project?

???

Make a Cheeseburger and Sell a Cheeseburger [1]

- *Management*: The Bozo Definition
  - *Managers* provide all the thinking and the people underneath them just carry out their bidding.
  - You may be able to *kick people* to make them active, but not to make them creative, inventive, and thoughtful.

Should We Have a Key Person?

- The *People Store*
  - Think of people as *parts* of the machine.
    When a part wears out, you get another.
  - Isn't that the essence of management, after all, to *make sure* that the work goes on whether the individuals stay or not?
    So why don't we have a *key person*?

Parkinson's Law

- Parkinson's law: *Work* expands to <u>fill the time</u> allocated for it.
- Organizational *busy work tends to expand* to fill the working day.
- The only way to get work done at all is to set an *impossibly optimistic* delivery date.
- Parkinson's law *almost certainly doesn't apply* to your development workers. Why?

EFFORT ESTIMATE PREPARED BY	AVERAGE PRODUCTIVITY	NUMBER OF PROJECTS
Programmer alone	8.0	19
Supervisor alone	6.6	23
Programmer & supervisor	7.8	16
Systems analyst	9.5	21
(No estimate)	12.0	24

Are We a Robot?

- We Haven't Got Time to *Think About This Job*, Only to Do It.

Give me six hours to chop down a tree and I will spend the first four sharpening the axe. —Abraham Lincoln

What Proportion Of Your Time Ought To Be Dedicated To Actually Doing The Task?

A Quota for Errors

- *Examples*: prototypes, code typos.
- Fostering an atmosphere that <u>doesn't allow</u> for error simply makes people *defensive*.
- They *don't* try things that may turn out <u>badly</u>.

Vienna Waits for You

- Getting people to work *longer* and *harder*.
- Your people are very aware of the one *short life* that each person is allotted.
- And they know too well that there has got to be something more important than the *silly job* they're working on.

Why Shouldn't We Work Overtime?

- *Overtime* is like sprinting: It makes some sense for the <u>last hundred yards</u> of the marathon for those with any energy left, but if you start sprinting in the first mile, you're just wasting time.
  - Trying to get people to sprint too much can only result in *loss of respect* for the manager.
  - The best workers take their *compensatory* under time when they can, and end up putting in forty hours of real work each week.
  - People under time pressure *don't work better*; they just work faster.
  - In order to work faster, they may have to *sacrifice the quality* of the product and their own job satisfaction.

Overtime for salaried workers is a figment of the naive manager's imagination.

So, How to Increase Productivity on Your Team?

- Productivity ought to mean *achieving* more in an <u>hour of work</u>, but all too often it has come to mean *extracting* more for an <u>hour of pay</u>.
- Theories of value:
  - The *Spanish Theory*: only a fixed amount of value existed on earth, and therefore the path to the accumulation of wealth was to learn to extract it more efficiently from the *soil* or from *people's backs*.
  - The *English Theory*: value could be created through *ingenuity* and *technology*.

Commitment is the Key

People commit to a group or organization because they *gain something* important from their involvement.

- Be open and clear about the mission, *principles*, and *goals* of your team
- Pick out the *right level* of challenge for people

How to Prevent Poor Performance?

- Ensure that an assignee knows
  - why her task is *important*,
  - *what* she need to do and <u>deliver,</u>
  - *when* she need to submit her result,
  - what is the *support* she needs.

The Second-System Effect [5]

- The general tendency is to over-design the second system, *using all the ideas and frills* that were cautiously sidetracked on the first one.
- Be conscious of the peculiar hazards of that system, and *exert extra self-discipline to avoid* functional ornamentation and to avoid extrapolation of functions that are obviated by changes in assumptions and purposes.

Employee Training [8]

- Cost
- Need
- Employee morale
- Scheduling demands
- *Certification*
- What If the employee takes a train class and then uses his new-found skills to find another job?
  - Employee agreements
- Maximizing the value of training (transferring knowledge)

Performance Reviews

- *Quality of work*
- Flexibility
- Creativity in solving problems
- Communication skills
- Innovation
- Going above and beyond the requirements of the job
- Coordination, interaction, and collaboration with others (particularly those they don't have direct authority over)
- *Accountability*
- *Ability to complete assignments in a timely manner*
- *Ethics and compliance*
- Ability to pick up new skills on their own
- Ability to work with and enhance the work of other staff members
- Ability to manage short- and long-term projects

Solving Performance Problem

- Make sure people have materials and *training*
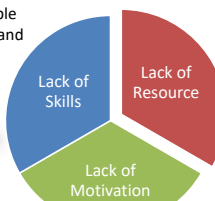
- Help people establish performance goals make sure people have the tools, *resources*

- Show *positive* things and people
- Help people focus on *past* success, strengths, rewards
- Help people *focus* on work

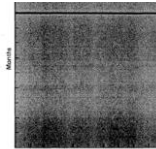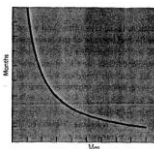- *Rewards* and *discipline* are clearly linked to performance and defined behavioral objectives.

Carrot and Stick Approach

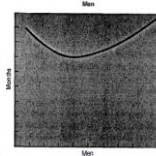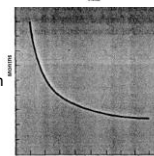## The Mythical Man-Month [5]

Adding manpower to a late software project makes it later.

Perfectly partition-able task

Unpartition-able task

Partition-able task requiring communication

Task with complex interrelation-ships

Maslow's Hierarchy of Needs [7]

They can seek knowledge, peace, esthetic experiences, self-fulfillment, oneness with God, etc.

Obtaining our full potential; becoming confident, eager to express our beliefs, and willing to reach out to others to help them

self-actualization
morality, creativity, spontaneity, acceptance, experience purpose, meaning and inner potential

self-esteem
confidence, achievement, respect of others, the need to be a unique individual

love and belonging
friendship, family, intimacy, sense of connection

safety and security
health, employment, property, family and social stability

physiological needs
breathing, food, water, shelter, clothing, sleep

Thrive

Survive

Alive

Dead

Without these people will *not act civilly*.

Necessary for life; unmet, these needs *lead to death*

Types of motivation: intrinsic and extrinsic

How Do You Motivate Your Employees?

**Forget praise. Forget punishment. Forget cash.
You need to make their jobs more interesting.**

- Most of us are motivated by *intrinsic rewards*: interesting, challenging work, and the opportunity to achieve and grow into greater responsibility.
- Of course, you have to provide *some extrinsic incentives*.
- After all, few of us can afford to work for *no salary*.
- *Enrich their jobs* by applying these principles:
  - Enable people to take on *new, more difficult tasks* they haven't handled before.
  - Assign individuals specialized tasks that allow them to *become experts*.
  - Increase *individuals' accountability* for their work by removing some controls.
  - Make information *available directly* to employees rather than sending it through their managers first.
  - Give people *responsibility* for a complete process or unit of work.

Coaching by Encouragement

- The purpose of *coaching* is to redirect behavior and mentally challenge the trainee.
- Coaching is not intended to *"do for"* the learner or *point out mistakes*, blame, or criticize.

Change incorrect actions or *redirect* the behavior:
- How else might you do it?
- See if this works better for you. (Be specific, explain, and demonstrate.)
- Why don't you try a different approach?
- Let me offer a suggestion.
- What happens if you don't do that step?

Giving Encouraging Feedback

- The purpose of feedback is to *build self-esteem* through encouragement.
- Feedback should *be specific, positive*, and focused on *the strengths* and assets of the trainee; it should demonstrate acceptance of and confidence in the trainee; and it should recognize effort and improvement.

- It usually takes a couple of practice sessions to master that step. You'll make it!
- Look how much better it went this time.
- You're making progress. Hang in there!
- You're really skilled in.................. (something specific)
- You must feel good about the improvement you've made.
- You have put a lot of effort into mastering that task.

Advanced Topics

Multi-team Management
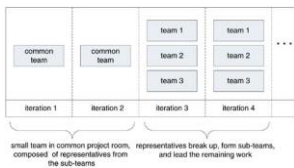
Is there any way to partition the project?

Presentation

- o The Preparation
- o *The Problem*, *The Solution*
- o What, How, Why, Who, When
- o The *Eyes*, The Voice, The Expression, The *Speed*, The Smiles
- o Pictures, Jokes, Natural, *Short*, Sweet, *Self-Confident*, Rehearsal

Spaces, Contrast and Alignment [11]
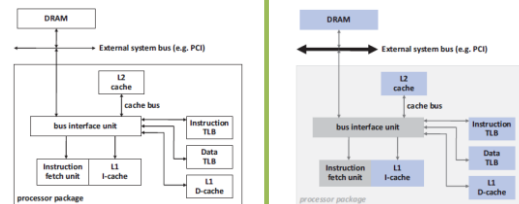

Text Versus Images
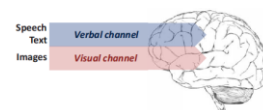
You cannot read and listen at the same time

Colors
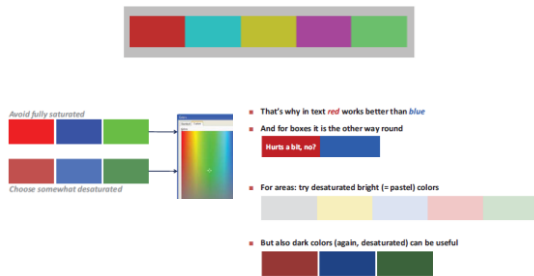
Boxes

The McKinsey 7S Framework [8]

- How do you go about analyzing *how well* your organization is positioned to achieve its intended objective?
- While some models of organizational effectiveness go in and out of fashion, one that has persisted is the *McKinsey 7S framework*.
- Developed in the early 1980s by Tom Peters and Robert Waterman, two consultants working at the McKinsey & Company consulting firm.
- The basic premise of the model is that there are *seven internal aspects* of an organization that need to be aligned if it is to be successful.

The Seven Elements

- *Strategy*: the plan devised to maintain and build competitive advantage over the competition.
- *Structure*: the way the organization is structured and who reports to whom.
- *Systems*: the daily activities and procedures that staff members engage in to get the job done.
- *Shared Values*: called "super-ordinate goals" when the model was first developed, these are the core values of the company that are evidenced in the corporate culture and the general work ethic.
- *Style*: the style of leadership adopted.
- *Staff*: the employees and their general capabilities.
- *Skills*: the actual skills and competencies of the employees working for the company.

Thank You for Your Time