Software Team Management

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Objectives

➢ To build a software team

➢ To *manage* a software team

➢ To *motivate* a software team

➢ To prepare and make *presentation*

References

1. BW Boehm and R Ross. Theory-W Software Project Management : Principles and Examples. 1989.
2. Nancy Duarte. *Slide:ology*. O'Reilly. 2008.
3. John W. Budd. Mind Maps as Classroom Exercises. 2003.
4. Joseph D. Novak. The Theory Underlying Concept Maps and How. 2006.
5. Frederick P. Brooks. *The Mythical Man-Month Essays on Software Engineering*. 1995.
6. Tom DeMarco and Timothy Lister. *Peopleware*. 1999.
7. A. H. Maslow. A Theory of Human Motivation. 1943.
8. William Holtsnider & Brian D. Jaffe. IT Manager's Handbook. Elsevier. 2012.
9. Tom Peters and Robert Waterman. Structure Is Not Organization. 1980.

Peopleware [6]

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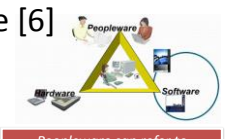
Peopleware can refer to anything that has to do with the role of people in the development or use of computer software and hardware systems, including such issues as developer productivity, teamwork, group dynamics, the psychology of programming, project management, organizational factors, human interface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

Communication

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

Meeting

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

➤ Responsibilities
- Chairman
- Secretary
- Attendees

➤ Agenda preparation
➤ Timeframe preparation
➤ Content, data preparation

Meeting minutes
○ Who were *present*?
○ What are the *targets*?
○ What are the *decisions, resolutions*?
○ Who are *responsible*?
○ *When* will decisions be effective?


Developing Your Team

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.

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

Adjourning
Performing
Norming
Storming
Forming

Establish *objectives* clearly.

Theory X [1]

McGregor _X_ _Y_

- 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.

Command | Control (Monitor compliance)
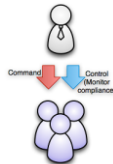
Theory Y

McGregor _X_ _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.

Command | Feedback designed to enable action
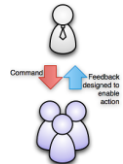
Theory Z

- 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
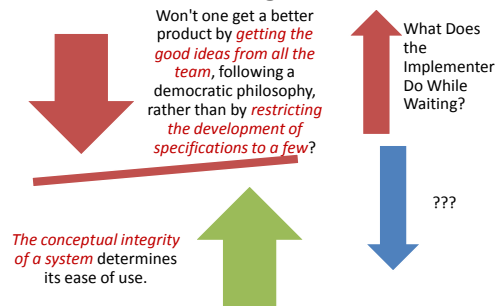Perform work
Supervise self
Report

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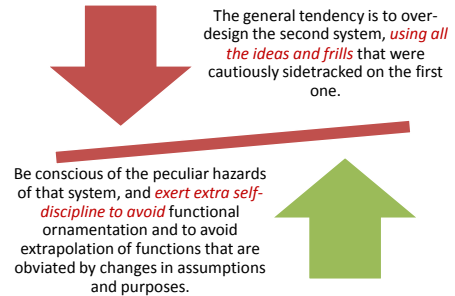Review progress

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The Surgical Team [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.

6/21/2014

Aristocracy, Democracy and System Design

Won't one get a better product 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.

What Does the Implementer Do While Waiting?

???

The Second-System Effect

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.

Make a Cheeseburger, Sell a Cheeseburger 6]

- A Quota for *Errors*
  - Fostering an atmosphere that doesn't allow for error simply makes people defensive. They don't try things that may turn out badly.
- *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.
- 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?
- We Haven't Got Time to *Think About This Job*, Only to Do It

Vienna Waits for You?

- 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.
- *Overtime* is like sprinting: It makes some sense for the last hundred yards 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.

Parkinson's Law

- *Work expands* to fill the time 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.

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

Performance Reviews [8]

Evaluation
- [x] OUTSTANDING
- [ ] Excellent
- [ ] Very Good
- [ ] Average
- [ ] Below Average

- *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

3

Performance Problem

Make sure people have materials and *training*

Help people establish performance goals make sure people have the tools, *resources*

Lack of Skills

Lack of Resource

Lack of Motivation

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.
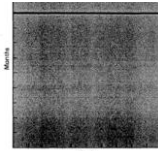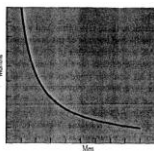

Employee Training [8]

- Cost
- Need
- Employee morale
- Scheduling demands
- *Certification*
- What If the Employee Takes a Training Class and Then Uses His New-Found Skills to Find Another Job?
  - Employee agreements
- Maximizing the Value of Training
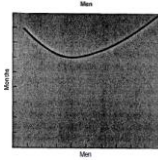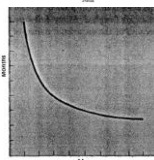

The Mythical Man-Month [5]

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 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:
  - Increase *individuals' accountability* for their work by removing some controls.
  - Give people *responsibility* for a complete process or unit of work.
  - Make information *available directly* to employees rather than sending it through their managers first.
  - Enable people to take on *new, more difficult tasks* they haven't handled before.
  - Assign individuals specialized tasks that allow them to *become experts*.

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.
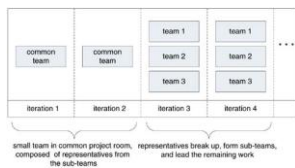
Coaching by Encouragement

- *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?

Advanced Topics

Multi-team Management

common team	common team	team 1	team 1	
		team 2	team 2	···
		team 3	team 3	
iteration 1	iteration 2	iteration 3	iteration 4	

small team in common project room, composed of representatives from the sub-teams

representatives break up, form sub-teams, and lead the remaining work

Is there any way to partition the project?

Presentation

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

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Spaces, Contrast and Alignment [2]
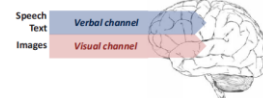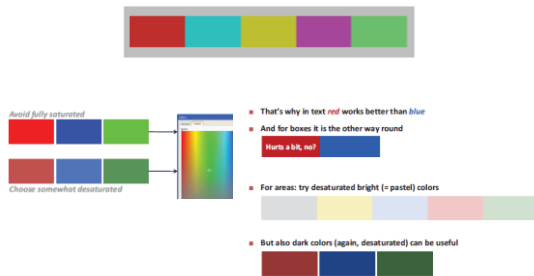
Presentations Are Very Important

- In contrast to a paper or other technical writing, or a simple interview, you present *your work and yourself*
- People *remember* good presentations:
  - Good content
  - Well presented
  - Well-designed slides
- You need to *put effort* into each presentation—it is worth it

No space

Bad contrast

Bad alignment

Presentations Are Very Important

- In contrast to a paper or other technical writing, or a simple interview, you present *your work and yourself*
- People *remember* good presentations:
  - Good content
  - Well-designed slides
  - Well delivered
- You need to *put effort* into each presentation—it is worth it
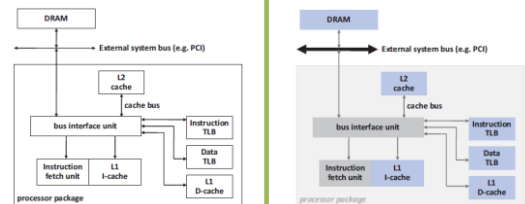

Text Versus Images

"Teleprompter"   "Slideument"   Presentation

Bad   Better   Ideal
(not always possible)

| Speech / Text | Verbal channel |
| Images | Visual channel |

You cannot read and listen at the same time

Colors

- Avoid fully saturated
- Choose somewhat desaturated

- That's why in text *red* works better than *blue*
- And for boxes it is the other way round
  - Hurts a bit, no?
- For areas: try desaturated bright (= pastel) colors
- But also dark colors (again, desaturated) can be useful

Boxes

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

Mind Map [3]

- *A mind map is* a form of an outline with ideas and pictures radiating out from a central concept.
- http://www.mindjet.com/
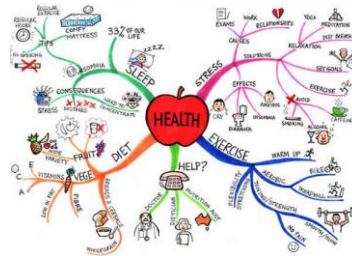
Concept Map [4]

- *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/
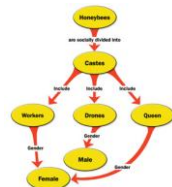
The McKinsey 7S Framework [8]

- 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