People Management

Week 13

Announcement

- Midterm 2
  - Wednesday, April 27
  - Scope
    - Week 11 – Week 13
  - Short answer questions

People in Software Development

- People are the most important asset for organizations
- The tasks of a manager are essentially ***people-oriented***. Unless there is some understanding of people, management will be unsuccessful
- Poor people management is an important contributor to project failure

Topics Covered

- Selecting staff
- Motivating people
- Managing groups
- People Capability Maturity Model
- Types of difficult persons and tactics

Selecting Staff

- An important project management task is team selection
- Information on selection comes from:
  - Information provided by the candidates
  - Information gained by interviewing and talking with candidates
  - Recommendations and comments from other people who know or who have worked with the candidates

Staff Selection Case Study

Alice is a software project manager working in a company that develops **alarm systems**. This company wishes to enter the growing market of assistive technology to help elderly and disabled people live independently. Alice has been asked to lead a team of 6 developers that can develop new products based around the company's alarm technology. Her first role is to select team members either from software engineers already in the company or from outside.

To help select a team, Alice first assesses the skills that she will need: These are:

- Experience with existing alarm technology, as it is reused
- User interface design experience because the users are untrained and may be disabled and hence need facilities such as variable font sizes, etc.
- Ideally, someone who has experience of designing assistive technology systems. Otherwise, someone with experience of interfacing to hardware units as all systems being developed involve some hardware control.
- General purpose development skills.

Staff Selection Case Study

The next stage is to try and find people from within the company with the necessary skills. However, the company has expanded significantly and has few staff available. The best that Alice can negotiate is to have help from an alarm expert (Fred) for 2 days/week. She therefore decides to advertise for new project staff, listing the attributes that she'd like:

- Programming experience in C. She has decided to develop all the assistive technology control software in C.
- Experience in user interface design. A UI designer is essential but there may not be a need for a full-time appointment.
- Experience in hardware interfacing with C and using remote development systems. All the devices used have complex hardware interfaces.
- Experience of working with hardware engineers. At times, it will be necessary to build completely new hardware.
- A sympathetic personality so that they can relate to and work with elderly people who are providing requirements for and are testing the system.

Staff Selection Case Study

Alice gets 30 responses to the advertisement and, from the applicants, is able to identify suitable candidates with hardware interfacing (Dorothy) and user interface design experience (Ed). She also decides to hire two new graduates (Brian and Bob) who have some C programming experience but who will essentially have to be trained in the company. All that remains then is to appoint a more senior programmer to join the development team and Alice has two choices. Carol has several year C programming experience and has recently taken a short career break to have children. Dave has a comparable amount of programming experience and is a programming enthusiast. He spends most of his spare time working on open source development projects and has encyclopedic knowledge of C and C++.

After interviewing both Carol and Dave, Alice decided to offer the job to Carol although Dave has deeper programming knowledge.

Lessons

- Managers in a company may not wish to lose people to a new project. Part-time involvement may be inevitable
- Skills such as UI design and hardware interfacing are in short supply
- Recent graduates may not have specific skills but may be a way of introducing new skills
- Technical proficiency may be less important than social skills

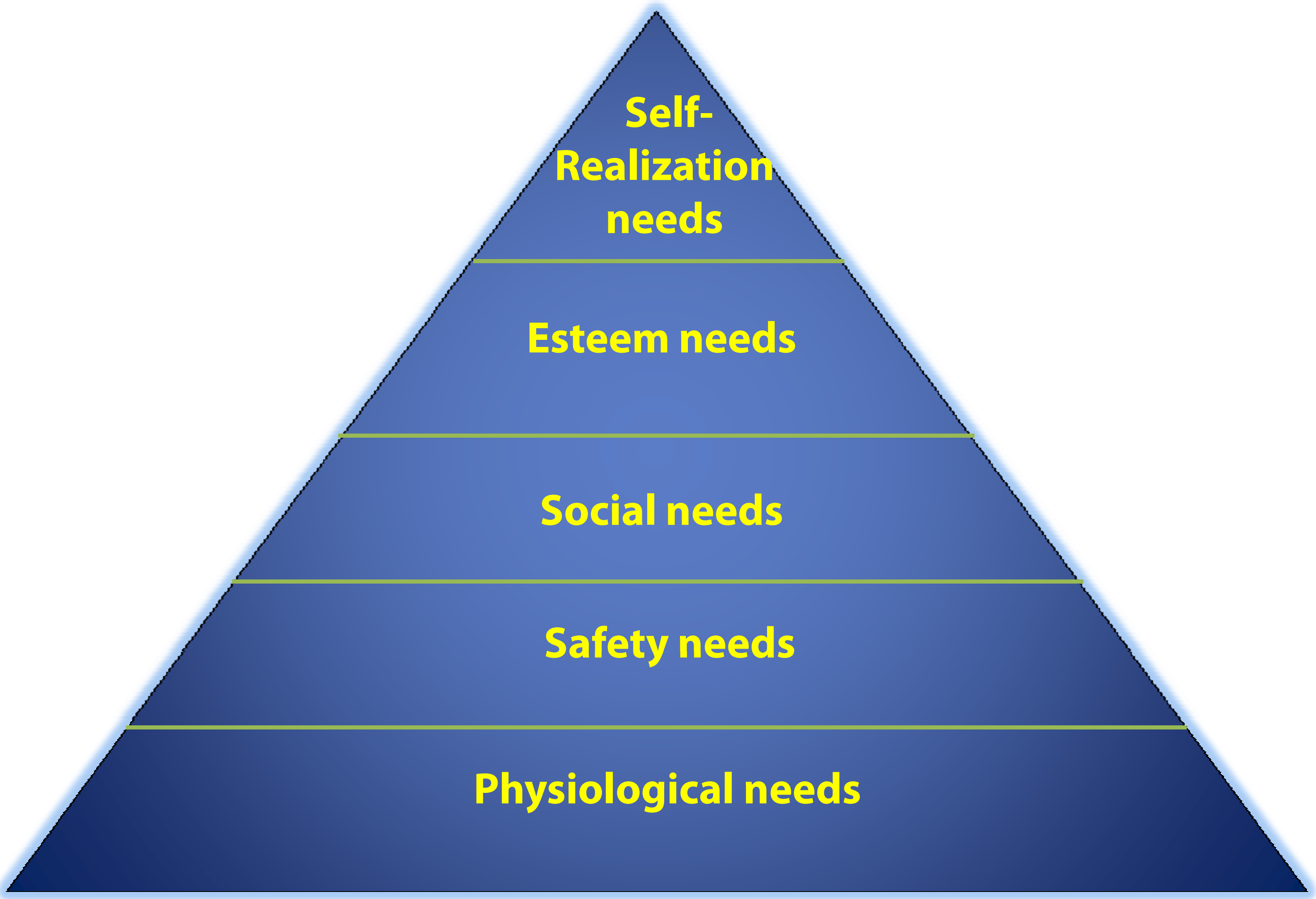
Staff Selection Factors

Factor	Explanation
Application domain experience	For a project to develop a successful system, the developers must understand the application domain. It is essential that some members of a development team have some domain experience.
Platform experience	This may be significant if low-level programming is involved. Otherwise, this is not usually a critical attitude.
Programming language experience	This is normally only significant for short duration projects where there is not enough time to learn a new language. While learning a language itself is not difficult, it takes several months to become proficient in using the associated libraries and components.
Problem solving ability	This is a very important for software engineers who constantly have to solve technical problems. However, it is almost impossible to judge without knowing the work of the potential team member.

Staff Selection Factors

Factor	Explanation
Educational background	This may provide an indicator of what the candidate knows and his or her ability to learn. This factor becomes increasingly irrelevant as engineers gain experience across a range of projects.
Communication ability	Project staff must be able to communicate orally and in writing with other engineers, managers and customers.
Adaptability	Adaptability may be judged by looking at the experience that candidates have had. This is an important attribute, as it indicates an ability to learn.
Attitude	Project staff should have a positive attitude toward their work and should be willing to learn new skills. This is an important attitude but often very difficult to assess.
Personality	This is an important attribute but difficult to assess. Candidates must be reasonably compatible with other team members. No particular type of personality is more or less suited to software engineering.

Human Needs Hierarchy *- Maslow*



Self-Realization needs

Esteem needs

Social needs

Safety needs

Physiological needs

Motivating People

- An important role of a manager is to motivate the people working on a project
- Motivation is a complex issue but it appears that there are different types of motivation based on:
  - Basic needs (e.g. food, sleep, safety, etc.)
  - Social needs (e.g. to be accepted as part of a group)
  - Personal needs (e.g. respect, self-esteem, self-realization, learning, responsibility, etc.)

People Working in Software Development Need Satisfaction

- Social
  - Provide communal facilities
  - Allow informal communications
- Esteem
  - Recognition of achievements
  - Appropriate rewards
- Self-realization
  - Personal development
  - Responsibility

Individual Motivation

Alice’s assistive technology project starts well. Good working relationships develop within the team and creative new ideas are developed. The company decides to develop a peer-to-peer messaging system using digital television linked to the alarm network for communications. However, some months into the project, Alice notices that Dorothy, the hardware design expert starts coming into work late, the quality of her work deteriorates and, increasingly, she does not appear to be communicating with other members of the team.

Alice talks about the problem with other team members to try to find out if Dorothy’s personal circumstances have changed and if this might be affecting her work. They don’t know of anything so Alice decides to talk with Dorothy to try to understand the problem.

Individual Motivation

After some initial denials that there is a problem, Dorothy admits that she lost interest in the job. She expected she would be able to develop and use her hardware interfacing skills. However, because of the product direction that has been chosen, she has little opportunity for this. Basically, she is working as a C programmer with other team members. While she admits that the work is challenging, she is concerned that she is not developing her interfacing skills. She is worried that finding a job that involves hardware interfacing will be difficult after this project . Because she does not want to upset the team by revealing that she is thinking about the next project, she has decided that it is best to minimize conversation with them.

Lessons

- Personal difficulties commonly affect motivation because people cannot concentrate on their work
- Give people time and support to resolve the issues, and meanwhile need to make it clear that the people concerned still have a responsibility to their employer

Motivation Balance

- Individual motivations are made up of elements of each class
- The balance can change depending on personal circumstances and external events
- However, people are not just motivated by personal factors but also by being part of a group and culture
- People go to work because they are motivated by the people that they work with

Organizing Groups

- Most software engineering is a group activity
  - The development schedule for most non-trivial software projects is such that they cannot be completed by one person working alone
  - As a general rule, software engineering project groups should have normally no more than eight or ten members

Organizing Groups (cont'd)

- Putting together a group that works efficiently is a critical management task
- It is obviously important that the group should have the right balance of technical skills, experience and personalities
- However, successful groups are more than simply a collection of individuals with the right balance of skills
- A good group has a team spirit so that the people involved are motivated by the success of the group as well as their personal goals

Personality types

- **Task-oriented**
  - The motivation for doing the work is the work itself
- **Self-oriented**
  - The work is a means to an end which is the achievement of individual goals
- **Interaction-oriented**
  - The principal motivation is the presence and actions of co-workers. People go to work because they like to go to work

Factors Influencing Group Working

- Group composition
- Group cohesiveness
- Group communications
- Group organization

Group Composition

- Group composed of members who share the same motivation can be problematic
- People who are motivated by the work are likely to be the strongest technically
- People who are self-oriented will probably be the best at pushing the work forward to finish the job
- People who are interaction-oriented help facilitate communication within the group
- An effective group has a balance of all types

Group Composition

In creating a group for assistive technology development, Alice is aware of the importance of selecting members with complementary personalities. When interviewing people, she tried to assess whether they were task-oriented, self-oriented or interaction-oriented. She felt that she was primarily a self-oriented type as she felt that this project was a way in which she would be noticed by senior management and promoted. She therefore looked for one or perhaps two interaction-oriented personalities with the remainder task-oriented. The final assessment that she arrived at was:

Alice – self-oriented
Brian – task-oriented
Bob – task-oriented
Carol – interaction-oriented
Dorothy – self-oriented
Ed – interaction-oriented

Group Leadership

- Leadership depends on respect not status
- There may be both a technical and an administrative leader
- Democratic leadership is more effective that autocratic leadership

Group Cohesiveness

- In a cohesive group, members consider the group to be more important than any individual in it
- The advantages of a cohesive group are
  - Group quality standards can be developed
  - Group members work closely together so inhibitions caused by ignorance are reduced
  - Team members learn from each other and get to know each other’s work
  - Egoless programming where members strive to improve each other’s programs can be practised

Team Spirit

Alice is an experienced project manager and understands the importance of creating a cohesive group. As the product development is new, she takes the opportunity of involving all group members in the product specification and design by getting them to discuss possible technology with elderly members of their families and to bring these to the weekly group lunch. The group lunch is an opportunity for all team members to meet informally, talk around issues of concern and, generally, get to know each other.

The lunch is organised as an information session where Alice tells the group members what she knows about organisational news, policies, strategies, etc. Each team member then briefly summarises what they have been doing and the group then discusses some general topic such as new product ideas from elderly relatives.

Every few months, Alice organises an ‘away day’ for the group where the team spend two days on ‘technology updating’. Each team members prepares an update on some relevant technology and presents it to the group. This is an off-site meeting in a good hotel and plenty time is scheduled for discussion and social interaction.

Developing Cohesiveness

- Cohesiveness is influenced by factors such as the organisational culture and the personalities in the group
- Cohesiveness can be encouraged through
  - Social events
  - Developing a group identity and territory
  - Explicit team-building activities
- Openness with information is a simple way of ensuring all group members feel part of the group

Group Loyalties

- Group members tend to be loyal to cohesive groups
- 'Groupthink' is preservation of group irrespective of technical or organizational considerations
- Management should act positively to avoid groupthink by forcing external involvement with each group

Group Communications

- Good communications are essential for effective group working
- Information must be exchanged on the status of work, design decisions and changes to previous decisions
- Good communications also strengthens group cohesion as it promotes understanding

Group Communications

- Group size
  - The larger the group, the harder it is for people to communicate with other group members
- Group structure
  - Communication is better in informally structured groups than in hierarchically structured groups
- Group composition
  - Communication is better when there are different personality types in a group and when groups are mixed
- Physical work environment
  - Good workplace organisation can help encourage communications

Group Organization

- Small software engineering groups are usually organized informally without a rigid structure.
- For large projects, there may be a hierarchical structure where different groups are responsible for different sub-projects.

Democratic Groups

- The group acts as a whole and comes to a consensus on decisions affecting the system
- The group leader serves as the external interface of the group but does not allocate specific work items
- This approach is successful for groups where all members are experienced and competent
- Communication may NOT be efficient

Chief Programmer Teams

- Consist of a kernel of specialists helped by others added to the project as required
- The motivation behind their development is the wide difference in ability in different programmers
- This chief programmer approach, in different forms, has been successful in some settings
- There is a high project risk as the project will fail if both the chief and deputy programmer are unavailable

Extreme Programming Groups

- Extreme programming groups are variants of an informal, democratic organization
- Programmers work in pairs and take a collective responsibility for code that is developed
- May not be efficient for large-scale projects

WE'RE GOING TO TRY SOMETHING CALLED EXTREME PROGRAMMING.
scottadams@aol.com
www.dilbert.com
FIRST, PICK A PARTNER. THE TWO OF YOU WILL WORK AT ONE COMPUTER FOR FORTY HOURS A WEEK.
© 2002 United Feature Syndicate, Inc.
1/9/03
THE NEW SYSTEM IS A MINUTE OLD AND I ALREADY HATE EVERYONE.

Working Environments

- The physical workplace provision has an important effect on individual productivity and satisfaction
  - Comfort
  - Privacy
  - Facilities
- Health and safety considerations must be taken into account
  - Lighting
  - Heating
  - Furniture

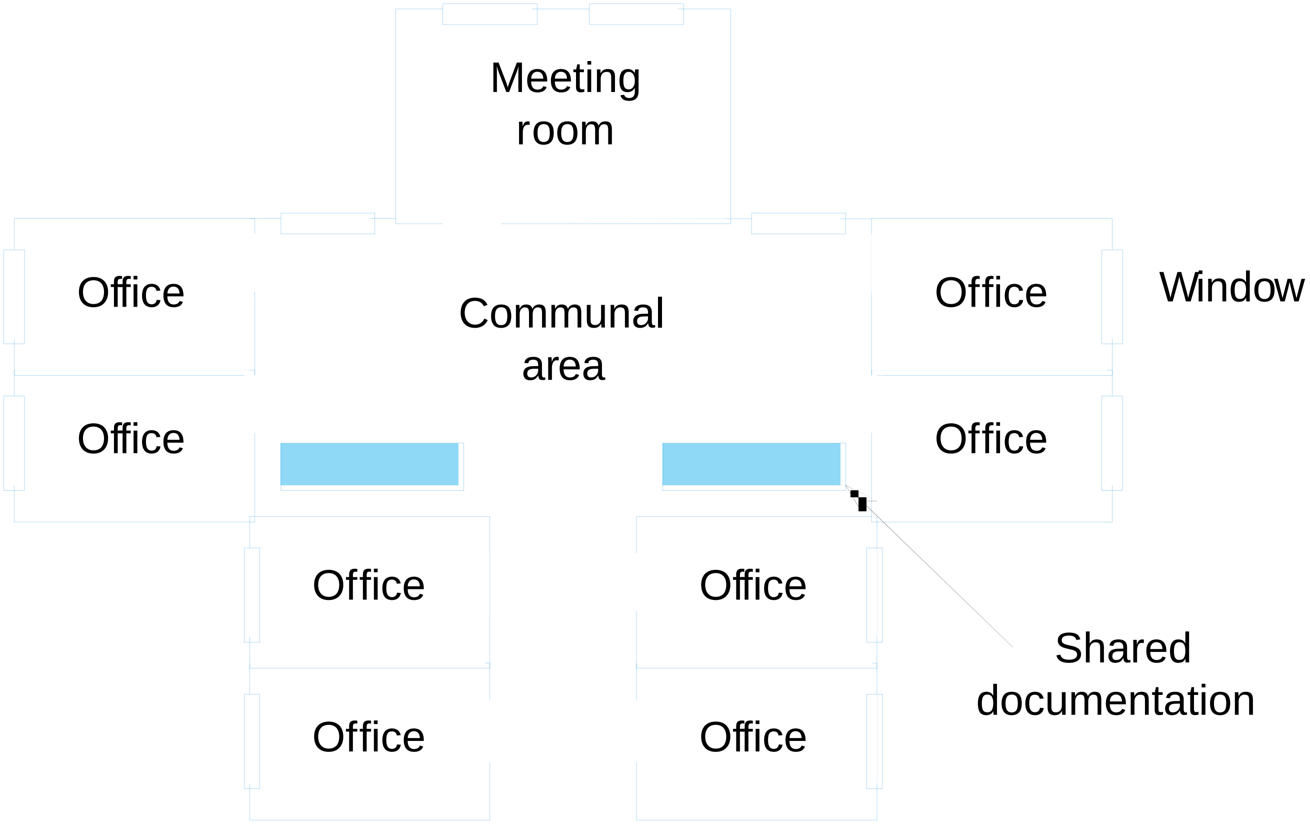
Environmental Factors

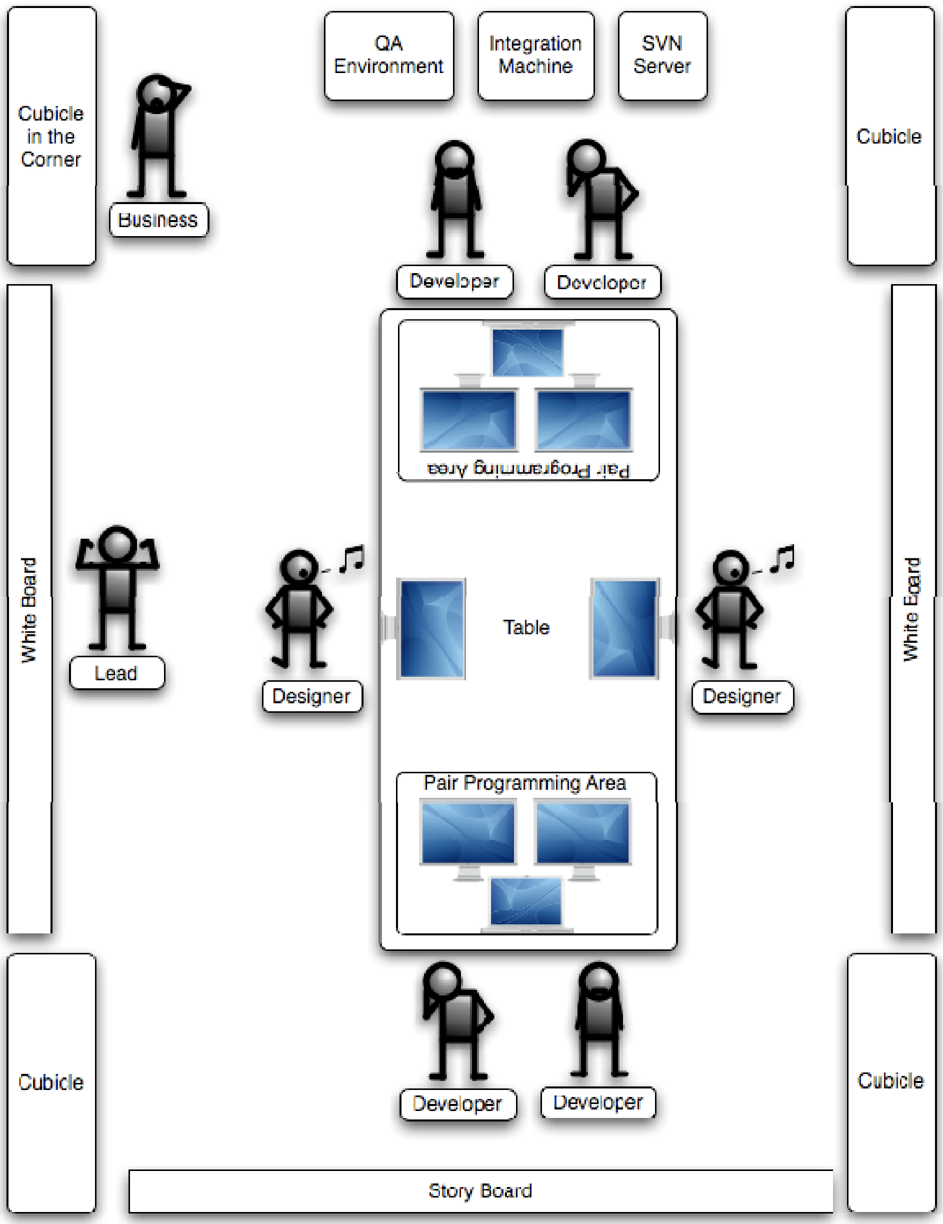
- Privacy - each engineer requires an area for uninterrupted work
- Outside awareness - people prefer to work in natural light
- Personalization - individuals adopt different working practices and like to organize their environment in different ways

Workspace Organization

- Workspaces should provide private spaces where people can work without interruption
  - Providing individual offices for staff has been shown to increase productivity
- However, teams working together also require spaces where formal and informal meetings can be held

Office Layout





http://farm2.static.flickr.com/1041/1260430054_a968903719_o.png

The People Capability Maturity Model

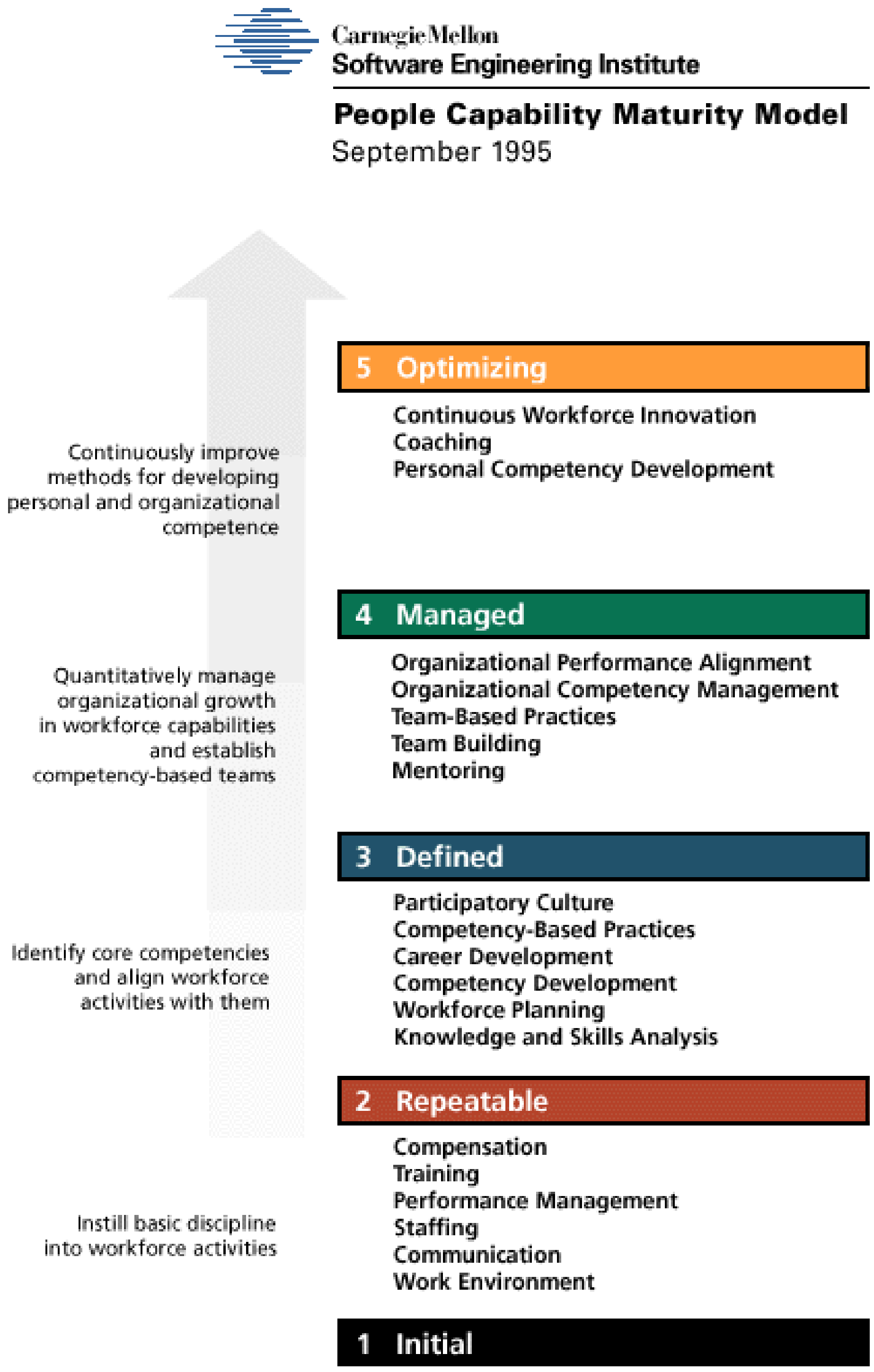
- Intended as a framework for managing the development of people involved in software development

P-CMM Objectives

- To improve organisational capability by improving workforce capability
- To ensure that software development capability is not reliant on a small number of individuals
- To align the motivation of individuals with that of the organization
- To help retain people with critical knowledge and skills

P-CMM Levels

- Five stage model
  - Initial: Ad-hoc people management
  - Repeatable: Policies developed for capability improvement
  - Defined: Standardised people management across the organisation
  - Managed: Quantitative goals for people management in place
  - Optimizing: Continuous focus on improving individual competence and workforce motivation



Carnegie Mellon
Software Engineering Institute

People Capability Maturity Model
September 1995

5 Optimizing

Continuously improve methods for developing personal and organizational competence

Continuous Workforce Innovation
Coaching
Personal Competency Development

4 Managed

Quantitatively manage organizational growth in workforce capabilities and establish competency-based teams

Organizational Performance Alignment
Organizational Competency Management
Team-Based Practices
Team Building
Mentoring

3 Defined

Identify core competencies and align workforce activities with them

Participatory Culture
Competency-Based Practices
Career Development
Competency Development
Workforce Planning
Knowledge and Skills Analysis

2 Repeatable

Instill basic discipline into workforce activities

Compensation
Training
Performance Management
Staffing
Communication
Work Environment

1 Initial

http://www.sei.cmu.edu/cmm-p/p-cmm-levels.gif

Key Points

- Staff selection factors include education, domain experience, adaptability and personality
- People are motivated by interaction, recognition and personal development
- Software development groups should be small and cohesive. Leaders should be competent and should have administrative and technical support

Key Points

- Group communications are affected by status, group size, group organisation and the gender and personality composition of the group

- Working environments should include spaces for interaction and spaces for private working.

- The People Capability Maturity Model is a framework for improving the capabilities of staff in an organisation

Type of Difficult Person	Characteristics
Hostile-aggressive	• Bullies, overwhelms, and intimidates others • Throws tantrums • Criticizes and argues relentlessly • Believes there's only one way to handle a situation – can't accept feedback • Reacts even more strongly to resistance from others
Web Blanket	• Uses negativism. "It won't work," or "We tried that last year." (Not the same as one who carefully figures out alternatives.) • Feels those in power don't care or are self-serving.
Know-it-all	• Feels and exerts the impressive of absolute certainty, power, and authority • Is usually right • Cannot be discussed once on a course • Treats others as irrelevant
Balloon	• Speaks with great authority about subjects about which he/she has little knowledge: pretends to be an expert • Often only partially aware he/she is speaking beyond their knowledge
Staller	• Is pleasant and supportive, but avoids decision making until the decision is made for him/her • Hints and beats around the bush as a compromise between being honest and not hurting someone • Quality-oriented, can't let go of something until it's perfect–which means never.
Complainer	• Acts self-righteous, blames and accrues others • Make no effort to solve problem (feels powerless)
Clam	• Use monosyllables or silence (clamming up) to avoid • May feel he/she has been backed into a comer
Super Agreeable	• Is often personable, funny, outgoing • Tells you what you want to hear, but lets you down in a crisis • Commits to actions they won't or can't follow through on – to stay on "good term" with others
Deadwood	• Doesn't contribute anything to the actual team effort • Is often in a power position
One Who Takes All the Credit (Plagiarist)	• Steals credit for others' achievements, ideas, role, organizational abilities, etc.

Type of Difficult Person	Tactics
Hostile-aggressive	• Don’t panic. Stand up to the hostile. • Don’t take it personally • Give him/her time to run down (not too long – they’ll see it as a weakness) • Get his/her attention carefully (use name and person clearly and loudly) • Get him/her to sit down • Avoid head-on fight (you’ll be run over) • Show him/her you take him/her seriously by paraphrasing what he/she had said
Web Blanket	• Don’t argue • State your own realistic optimism. • Don’t rush into proposing solutions • Set a “horror floor.” (What’s the worst thing that could happen?) • Be ready to take action on your own
Know-it-all	• Do your homework • Question firmly but don’t confront • Present alternatives as detours • Avoid being a counter-expert
Balloon	• State facts as an alternative version • Give balloon a way out (in private, if possible)
Staller	• Get him/her to describe the plan in detail • Rank alternatives • Link plan to values of quality and service • Give support after decision is made • Follow up
Complainer	• Listen attentively • Switch to problem – solving -- what would happen if … “What’s the first step?” • Paraphrase -- define the problem
Clam	• Ask open-ended questions • Use a friendly stare until clam responds • Comment on what’s happening (“Our meeting seems to be at an impasse”)

Type of Difficult Person	Tactics
Super Agreeable	• Let him/her know you value him/her as a person by telling him/her directly • Compromise/negotiate if conflict arises • Get his/her commitments in writing • Follow through • Be prepared to take action on your own
Deadwood	• Understand why the person is there – he/she may occupy a role position in the formal power structure that is important to smooth functioning of the informal power system • Try assertiveness if the person becomes difficult
One Who Takes All the Credit (Plagiarist)	• Control the plagiarist in front of a mutually respected third party • Emphasize the team effort, if applicable • For written material, send additional copies of it, with our name on it, to people higher than the plagiarist

Source: Dr. K. Kruper
(Kay Williams, Boeing)