Managing people

- Managing people working as individuals and in groups
- People are an organisation's most important assets

Management activities

- Problem solving (using available people)
- Motivating (people who work on a project)
- Planning (what people are going to do)
- Estimating (how fast people will work)
- Controlling (people's activities)
- Organizing (the way in which people work)

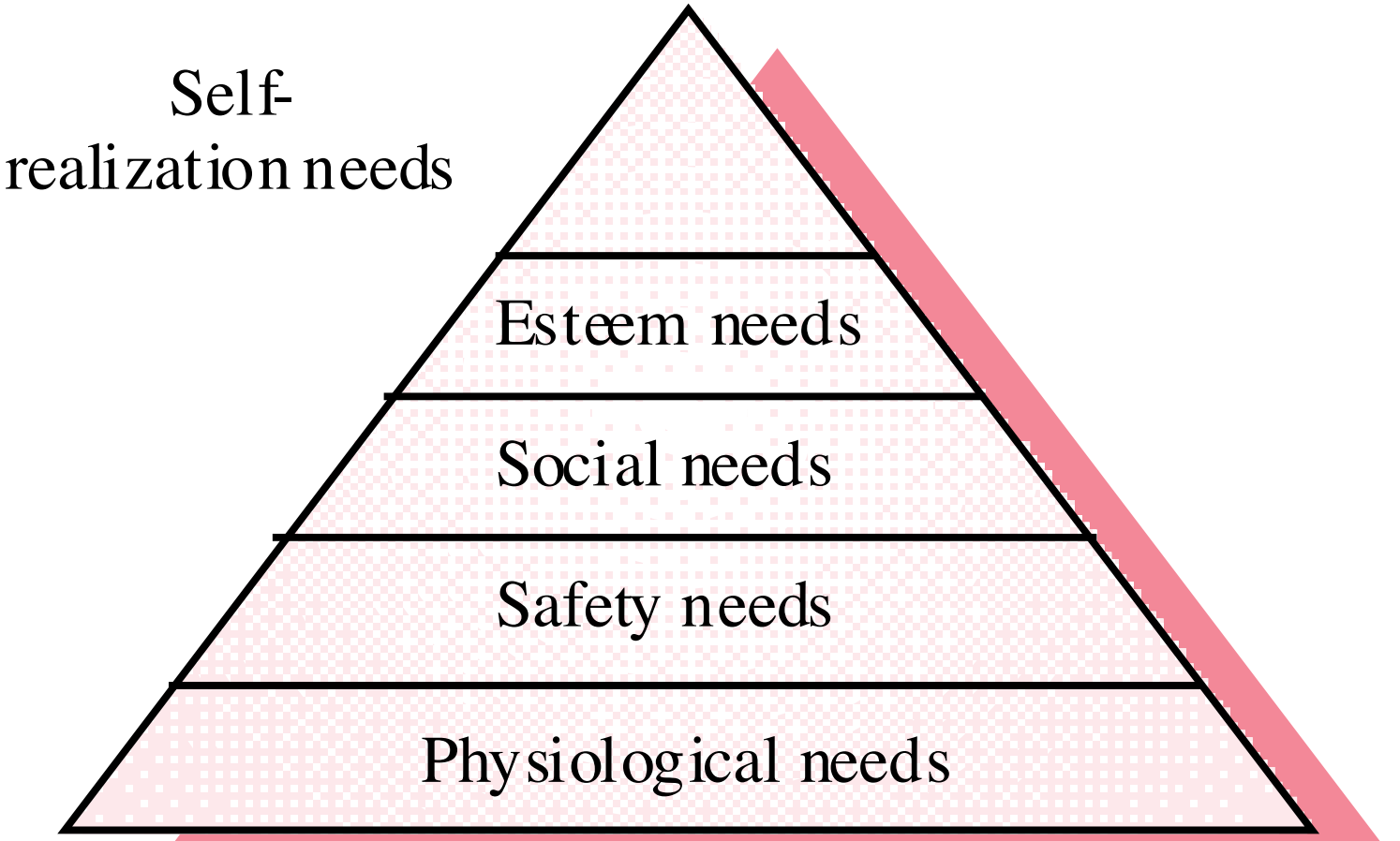
Problem solving

- Requires the integration of different types of knowledge (computer, task, domain, organisation)
- Development of a model of the solution and testing of this model against the problem
- Representation of this model in an appropriate notation or programming language

Motivation

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

Human needs hierarchy



Personality types

- The needs hierarchy is almost certainly an over-simplification
- Motivation should also take into account different personality types:
  - Task-oriented
  - Self-oriented
  - Interaction-oriented

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 - e.g. to get rich, to play tennis, to travel etc.
- Interaction-oriented
  - The principal motivation is the presence and actions of co-workers. People go to work because they like to go to work

Group working

- 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
- Group interaction is a key determinant of group performance
- Flexibility in group composition is limited
  - Managers must do the best they can with available people

Group composition

- Group composed of members who share the same motivation can be problematic
  - Task-oriented - everyone wants to do their own thing
  - Self-oriented - everyone wants to be the boss
  - Interaction-oriented - too much chatting, not enough work
- An effective group has a balance of all types
- Can be difficult to achieve because most engineers are task-oriented
- Need for all members to be involved in decisions which affect the group

Group leadership

- Leadership depends on respect not title or status
- There should be both a technical and a managerial leader
- A career path based on technical competence should be supported

Group cohesiveness

- In a cohesive group, members consider the group to be more important than any individual in it
- 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

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

- Status of group members
  - Higher status members tend to dominate conversations
- Personalities in groups
  - Too many people of the same personality type can be a problem
- Sexual composition of group
  - Mixed-sex groups tend to communicate better
- Communication channels
  - Communications channelled though a central coordinator tend to be ineffective

Group organisation

- Software engineering group sizes should be relatively small (< 8 members)
- Break big projects down into multiple smaller projects
- Small teams may be organized in an informal, democratic way
- Chief programmer teams try to make the most effective use of skills and experience

Choosing and keeping people

- Choosing people to work on a project is a major managerial responsibility
- Appointment decisions are usually based on
  - information provided by the candidate (their resume)
  - information gained at an interview
  - recommendations from other people who know the candidate
- Some companies use psychological or aptitude tests
  - There is no agreement on whether or not these tests are actually useful

Staff Selection factors

Factor	Explanation
Application domain experience	For a project to develop a successful system, the developers must understand the application domain.
Platform experience	May be significant if low-level programming is involved. Otherwise, not usually a critical attribute.
Programming language experience	Normally only significant for short duration projects where there is insufficient time to learn a new language.
Educational background	May provide an indicator of the basic fundamentals which the candidate should know and of their ability to learn. This factor becomes increasingly irrelevant as engineers gain experience across a range of projects.
Communication ability	Very important because of the need for project staff to communicate orally and in writing with other engineers, managers and customers.
Adaptability	Adaptability may be judged by looking at the different types of experience which candidates have had.This is an important attribute as it indicates an ability to learn.
Attitude	Project staff should have a positive attitude to their work and should be willing to learn new skills. This is an important attribute but often very difficult to assess.
Personality	Again, 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.

Working environments

- 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

The People Capability Maturity Model

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