What is a project team?

- Members of the project team make all the decisions going from problem to solution
- Intellectual control - making correct decisions about:
  - System requirements, system structure (decomposition), interfaces, detailed design, etc.
  - Realizes the functional and quality requirements
- Managerial control - making effective decisions about:
  - Overall budget and schedule, allocation of people to tasks, tasks to time, when tasks are complete
  - Realizes requirements for on-time and budget delivery

What is a Great Team?

- Diverse Skills
  - People skills, communication and writing skills, design skills, implementation skills and knowledge
- Coherence
  - Shared expectations
  - Ability to build and work toward a shared vision
- Mutual Respect and Responsibility
  - You don’t have to like each other, but you need to trust and respect each other — and to earn your teammates trust and respect
  - This is an enduring part of professionalism in the real world

Desired Skill Mix

- Ideal is a mix of skills: technical, communication, management
- At least one person with experience in team projects, preferably with some management experience*
- At least one person with strong skills in programming, program design, preferably including networking
- At least one person with strong communication skills and good written English
Team Roles

- Manager: responsible for schedule
- Requirements analysts
- System architect
- Quality control (tester, reviewer)
- Technical writer
  - Technical documentation
  - User documentation (may be different skills)
- User interface designer
- Programmer
- Configuration control (build-master)

Not 1-1 with people. Have a backup for each role.

What do software developers do?

- One way to measure: how do they spend their time?
- IBM study (McCue 78):
  - 50% team interactions
  - 30% working alone
  - 20% not directly productive

i.e., Technical excellence is not enough

"Egoless" design

(Weinberg, *Psychology of Computer Programming*)

- Investing ego in group
- "Letting go" of ego investment in code, design, ideas
  - No winning or losing design debates
    (focus on improving the product)
- Once contributed, ideas belong to the group
- Criticism is aimed at concepts, not people
- The best designers criticize their own designs!
  - Our own assumptions are the hardest to critique
- Corollary: A good critic is your best ally
  - The hardest lesson to learn but one of the most valuable

... but we are not egoless people

- Ego investment is normal
  - be aware of it, be in control of it
- Consider the egos of others
  - What are you attacking? Why?
  - What is motivation of the other person?
    - Are they feeling ignored? Not valued?
- Pride in accomplishment is ok, unless it interferes with accomplishment
Consensus decision making

- Consensus is not counting votes
  - Democracy is 51% agreement
  - Unanimity is 100% agreement
  - Consensus is neither
    - It is "buying in" by group as a whole, including those who disagree
- Everyone has their say
- Everyone accepts the decision, even if they don't prefer it
- Usually best approach for peer groups

\emph{Consensus takes time and work, but is worthwhile}

Conflict

- Can be healthy and productive
- Can destroy a team if not carefully managed
- Manage conflict constructively
  - Soothe and protect egos
    - Everyone's job, but especially the manager's job
  - Keep conflict on a technical level (not personal)
  - Reward conflict resolution

Being a Good Team Member

- Attributes most valued by other team members
  - Dependability
    - When you say you'll do something, you do it
    - Correctly
    - On time
  - Carrying your own weight (doing a fair share of the work)
  - People will overlook almost everything else if you do these
- These are qualities we ask about in the peer evaluations at the course end

A Word on Managing

- A good manager supplies what is needed for the team to succeed. This includes (but is not limited to)
  - Resources
  - Planning and coordination
  - Pitching in when needed
  - Protection (especially from upper management)
  - Emotional support, etc.
- Good managers are are leaders not dictators (especially true for peer teams)
- Good managers are rare
Effective Meetings

Notes on effective meetings

• Only hold meetings if necessary
  – “Necessary” means that the most cost effective way to accomplish a goal is by meeting
• Have a goal, and a plan (agenda)
  – Clear meeting objectives
  – Known to all in advance (i.e., distribute via email)
• Plan to goal:
  – Participants - Invite only the necessary people
  – Schedule
  – Intended outcome
• Prepare
  – Cost of wasted time = Time x people x hourly cost
  – Cost of individual prep time is much less

Notes on effective meetings (2)

• Start on time, end on time
• Write down and disseminate the results
  – Leaves an audit trail of decisions
  – Makes people feel included
  – Limits the number of (informational) invitees
• End with concrete, specific action items
  – What must be done
  – Who should do it
  – What the follow-up is

Questions?