CS 160: Lecture 5

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Administrivia

- Contextual Inquiry assignment due next Weds at end of class. Email me if you need more time...
Teams

"A team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable." - K&S

Unpacking this statement...
Teams: Small numbers

- Small numbers are important because they allow direct relationships between all the members.

- It also allows a high level of awareness of how the project is going, and where each member is in their tasks.
Teams: Small numbers

Two problems arise when teams get too big:

* Centralization: a few people dominate, and several hardly contribute at all
* Communication: the overhead for communication goes up with the number of people
Teams: Small numbers

Team sizes vary of course. For CS160-style project work, it seems like 4-7 is the ideal range.
Team Size: Brooks Law

In the “Mythical Man Month”, Fred Brooks observed that per-programmer productivity in teams decreases with size of the team.

This is often called “Brooks Law” (programming teams are less than the sum of their parts).
Team Size: Communication

Sproull & Kiesler studied team programming in courses at CMU and found:

- Teams that did more communication by email rather than in face-to-face meetings were more productive. Teams with only F2F meetings were less productive.
Sproull and Kiesler’s work reinforces the idea that communication impacts group effectiveness.

Email is good for routine coordination and communication.
Communication again

- Face-to-face meetings are a good way to:
  - Create and foster common purpose
  - Resolve conflict

- Email and phone are good for:
  - Routine communication and decision-making
  - Coordination, reporting
Common Purpose

- Sense of purpose is a big part of team success.

- K&S: Set measurable performance goals
Goal setting

- Defines specific work products
- Facilitates communication and constructive conflict
- Attainable: maintain focus
- Leveling effect: focus on task rather than status
- Defines small wins as part of the larger purpose
- Goals are compelling
Mutual Accountability

- Mutual accountability distinguishes teams from other workgroups.

- In a team, each member measures their success in terms of the success of the team, and all its members.
Shared Leadership

In a team, leadership is often shared.

This is very hard to do:

* It requires a high level of trust among members
* It requires flexibility and self-critique among members
* It requires a strong sense of responsibility among all members - each individual is responsible for making sure every task happens
* It requires that all members share a common vision of where the team is going...
Shared Vision

- Helps all members put in their maximum effort:
  * They are more than employees, they are “owners and managers”
- Allows the team to build and evolve their vision
- Allows leadership and responsibility to be shared among the team
Sharing a Vision

Sharing a vision takes effort:

* Articulate and re-articulate it regularly
* Make it concrete and personal
* Use evocative language
* Look for other successful efforts with similar vision
Working as a team

- In workgroups, members meet, discuss, set priorities and then do division of labor.
- Teams continue to work closely together throughout a project.
- It's often difficult to breakdown the contributions of individuals in a team.
Encouraging debate

Open-ended discussion and brainstorming in a team are one of the best routes to creative ideas.

It’s very hard to do - there are many pitfalls and failure modes.

But it’s worth pursuing. Practice techniques and remember the themes from K&S.
Constructive Conflict

- Sometimes, groups strive for harmony and strong consensus.

- Generally speaking, the better the group feels about a decision, the less effective that decision is. (groupthink)

- Good decision-making involves resolution of differing viewpoints - constructive conflict
Conflict and Creativity

- In fact the most effective generator of creativity in a group is an authentic dissenter:
  - Someone who is credible and who genuinely disagrees with the rest of the group.

- Some groups use “devil’s advocates” for this reason. They’re not as effective.
Conflict and Creativity

- The key to constructive conflict is to focus on the task, and on individual ideas.

- Ideas and opinions must be detached from the individual.

- Ideas have to be clarified and developed before they can be criticized.
Break
Team membership

Skills:

- Technical/functional (experts)
- Problem-solving/decision-making
- Interpersonal skills
Interdisciplinary teams

Communication on the programming team was a problem. For the interdisciplinary team, it is a big problem.

Teams often depend on “gatekeepers” or facilitators with interdisciplinary skills and vocabulary to help team members understand each other. The differences are:
* Vocabulary, Meaning, Purpose
Building teams: Urgency

- Establish Urgency
- Purpose is worthwhile
- There is a clear way to move ahead
Building teams: Select for Skill

- Manager should choose team based on skills of members, and potential skills.

- Should personality be a factor?... stay tuned.
Setting rules of behavior

- E.g. no phone calls in meetings
- no sacred cows
- one conversation at a time
- encourage wild ideas
- no finger-pointing...
Set a few immediate goals

- Make them performance-oriented
- When results occur, the team starts feeling like a team
Bring in fresh facts and ideas

- Fact: teams do not share enough information (Hinds, Stanford).

- Regular updates and exchanges are much more valuable than they seem.

- This builds a sense of community and common knowledge.
Spend time together

Casual or “unstructured” interactions are very important for building shared context.

Putting people in the same space is the best way to do that.

Recreating this online is a bit of a challenge.
Positive Feedback

- Don’t miss an opportunity to reward or encourage legitimate effort.

- Positive reinforcement encourages more effort and performance beyond expectations.
When things go Wrong...

Remember first some personal goals for the course:

* Learning about UI design, which means an entire process including working in a diverse team
* Working on an effective team is a great learning experience
* Working on a difficult team is also very useful - you will develop coping skills that will be very important later
Channel personal drives

Most personal drives can work for the team or against it.

When conflicts occur, one or more of these is at work.

Recognize your own drives first:

* Whenever you disagree with someone, ask yourself why and what drive is at work
* Ask how your response advances the team’s goals, or even your own personal goals
Channel personal drives

- After analyzing your own drives, think about others, but:
  * Recognize that you can only guess at what drives someone else, and that changing their actions is much harder than changing your own
  * Avoid passing the blame

- Still, by understanding others’ drives, you may be able to steer their participation in the project so that they are better achieved
Channel personal drives

- Competitive instincts:
  * There is actually no-one to compete with in this course, but if you have a competitive drive apply it to other teams, not to your team-mates.
  * Appreciate and “own” team-mates skills and successes as your own.
Channel personal drives

• Perfectionism:
  * Design in practice is mostly compromise – deadlines prevent you from doing anywhere near as well as you would like to. Try instead to do the best you can in the time allowed.
  * Include team cohesion as one of your goals. Work on it.
  * Recognize that your future achievements will rely on many peoples’ efforts beyond your own.
  * Mastering **teamwork** is much more important than mastering Java, C#, or any design process.
Keep it concrete

- People often argue at length about principles before discovering that they agree on specifics.
- Ideology is fun to talk about, but not under time pressure when a project is at stake.
- Establish your team goals up front, before you are immersed in the project.
- Frame arguments in terms of concrete situations, personas, devices and interfaces.
Some of the most successful teams are characterized by extreme freedom of expression, especially criticism.

It is ruthless toward ideas, but never personal.

Success is judged in terms of how far the idea progresses, not how much each person contributes.
Help out

1. When conflicts arise between other team members (not yourself), it is your problem as much as theirs.
2. You are in a better position to mediate and resolve the conflict than the people having it.
3. Avoid taking sides, instead look for common ground. Keep the discussion concrete, specific, and revisit the teams’ goals.
Summary

- Teams are small groups, which are more than the sum of their parts
- They are characterized by shared goals, leadership and mutual accountability
- The last two distinguish teams from other workgroups
- Effective teamwork is hard
- Conflict resolution is a whole-team task