CS 160: Lecture 9

Prof. John Canny
Fall 2004

Administrivia

Lo-fi assignment due next Mon at end of class.

Status report?

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.” – Katzenbach & Smith

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

- For the Livenotes project, we studied group participation as a function of group size.

<table>
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<tr>
<th>Participation</th>
<th>Member rank</th>
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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.

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
Teams

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Team membership

Skills:

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

Building teams: Select for Skill

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

Should personality be a factor?... stay tuned.

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

Teams

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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

Common Purpose

- Sense of purpose is a big part of team success.
- Katzenbach and Smith: Set measurable performance goals

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Goal setting

- Defines specific work products (short to medium term goals):
- Facilitates communication and constructive conflict
- Attainable: maintain focus

Goal setting

- Leveling effect: focus on task rather than status
- Defines small wins as part of the larger purpose
- Goals are compelling
Teams

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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...

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 break down 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 hard to do - there are many pitfalls and failure modes.
- But it's worth pursuing. Practice techniques and remember the themes from K&S.

Break
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.

Setting rules of behavior

- IDEO's rules:
  - 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 don't go so smoothly

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.

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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 people's efforts beyond your own.
  - Mastering teamwork is much more important than mastering Java, C#, or any design process.

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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.

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Detach ideas from owners

- 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.

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Help out

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

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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.

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