CS 160: Managing Teams

Professor John Canny

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Administrivia

◊ Contextual Inquiry due Weds at end of class.

◊ Status report?

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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...

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Teams

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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.

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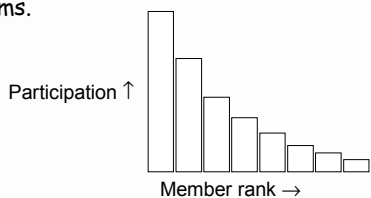

Teams: Small numbers

◊ Two problems arise when teams get too big:
  * **Centralization:** a few people dominate, and several hardly contribute at all
  * **Communication overhead:** the overhead for communication goes up faster than the number of people

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Teams: Small numbers

- For the Livenotes project, we studied group participation as a function of group size.
- Similar participation curves appear in other teams.

Participation ↑

Member rank →

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Teams: Small numbers

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

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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.

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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.

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Communication again

Sproull and Kiesler's work reinforces the importance of *appropriate* communication:

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

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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

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Team membership

🗐 Skills:

* Technical/functional (experts)

* Problem-solving/decision-making

* Interpersonal skills

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Building teams: Select for Skill

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

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

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Interdisciplinary teams

🗐 Communication on the CMU programming teams was a problem. For an interdisciplinary design 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

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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

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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

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Common Purpose

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

▣ Katzenbach and Smith: Set measurable performance goals

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Teams

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Goal setting

▣ Defines specific work products (short to medium term goals):

▣ Facilitates communication and constructive conflict

▣ Attainable: maintain focus

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Goal setting

▣ Leveling effect: focus on task rather than status

▣ Defines small wins as part of the larger purpose

▣ Goals are compelling

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Building teams: Urgency

▣ Establish Urgency

▣ Purpose is worthwhile

▣ There is a clear way to move ahead

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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.

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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…

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Break

- Ombudsman?

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Encouraging debate

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

- Its hard to do – there are many pitfalls and failure modes.

- But its worth pursuing. Practice techniques and remember the themes from K&S.

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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

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Conflict and Creativity

- We saw that the most effective enhancer 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.

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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 (e.g. Pixar)

◢ Ideas have to be clarified and developed before they can be criticized.

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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.

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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.

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Positive Feedback

◢ Don't miss an opportunity to reward or encourage legitimate effort.

◢ Positive reinforcement encourages more effort and performance beyond expectations.

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When things don't go so smoothly

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When things go Wrong...

◢ Remember first your 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

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Channel personal drives

- Most personal drives can work **for** the team or **against** it.
- When conflicts occur, one or more of these drives is pushing in the wrong direction.
- Recognize your own drives first:
  - * Whenever you disagree with someone, ask yourself why and what motive is at work?
  - * Ask how your response **advances** the team's goals, and your own personal goals

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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 accomplish more.

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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" your team-mates skills and successes as your own.
- There are good and bad designs, but you are not the judge.
- User testing is the ultimate arbiter.

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Channel personal drives

- Perfectionism:
  - * UI Design is mostly compromise – deadlines prevent you from doing 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.

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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
◫ Design benefits from uninhibited discussion and creative conflict
◫ Conflicts are an opportunity to improve team-building skills – use them
◫ Conflict resolution is a whole-team task

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