

CSE 403: Software Engineering, Spring 2015

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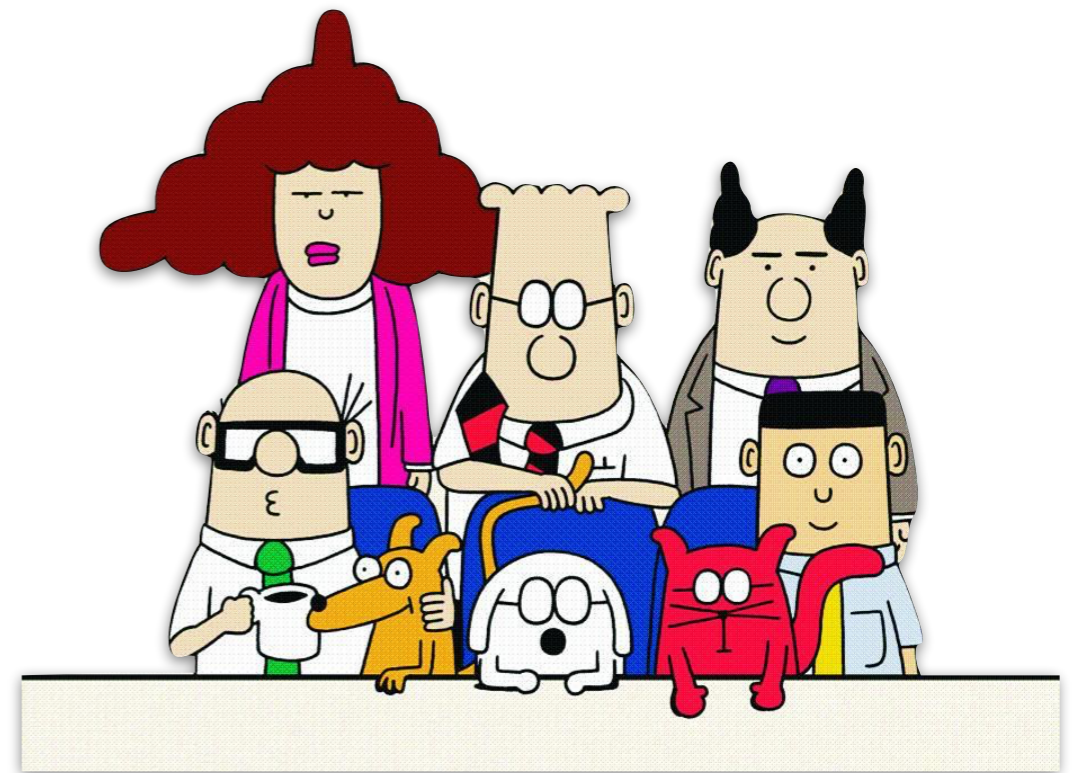
Working in Teams

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Outline

- Basics of teamwork
- Structure
- Decision making
- Motivation
- Communication



basics

benefits and risks of working in a team

When is a group of people a “team”?

“A team is a set of people with **complementary skills** who are committed to a **common purpose**, performance goals, and approach for which they hold themselves **mutually accountable.**”

– Katzenbach and Smith

Working in a team: benefits

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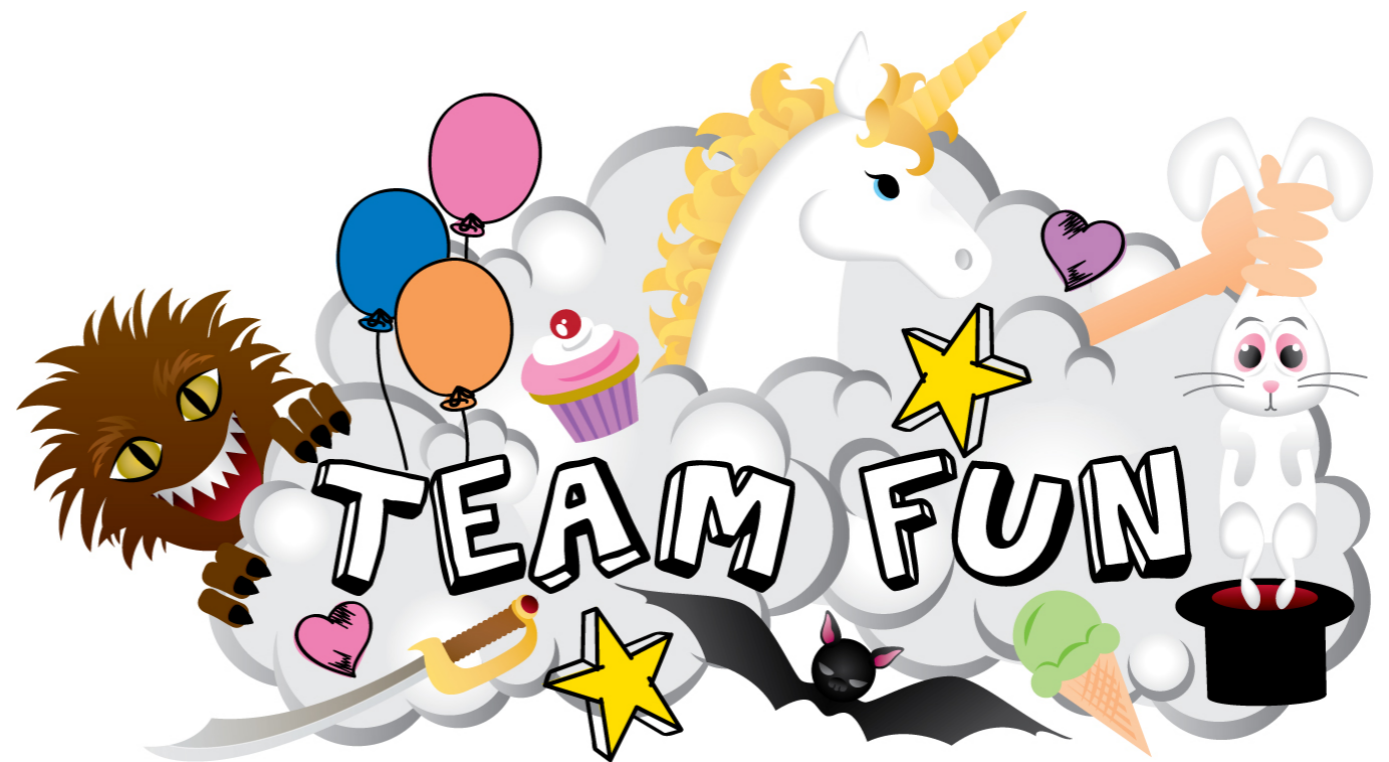
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- You can utilize the collective experience of everyone.
- It is fun to work with smart people toward a common goal!



Working in a team: risks

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- Communication and coordination issues

Working in a team: risks

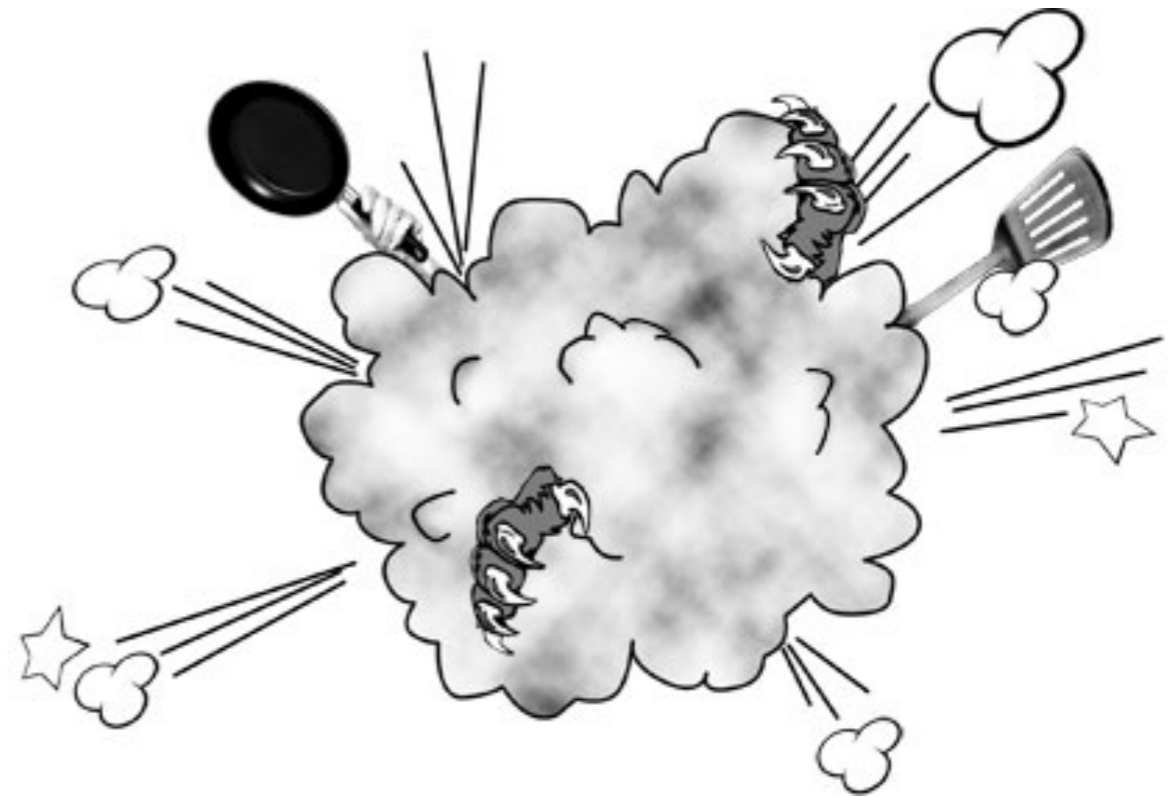
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Working in a team: risks

- Communication and coordination issues
- Groupthink, diffusion of responsibility, going along
- Working by inertia, not planning ahead
- Conflict or mistrust between team members



Issues affecting team success

- Team organization, experience, and size
 - results-driven structure
 - the need for bounded yet sufficient communication
 - presence of experienced members
- Motivation and commitment of team members
 - presence of a shared mission and goals
- Reward structure within the team
 - incentives, enjoyment, empowerment (ownership, autonomy)

decide

team structure and decision making

Common roles in a software team

- Designers / architects
- Developers: programmers, testers, integrators
- Lead developer (tech lead)
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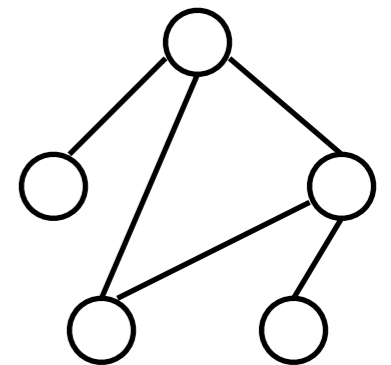
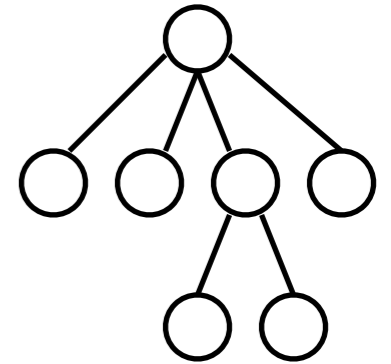
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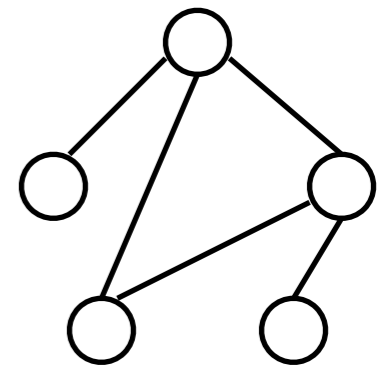
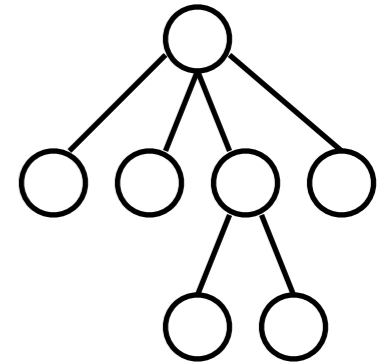
Key to success: identify and stress roles and responsibilities.

Team structure models



Team structure models

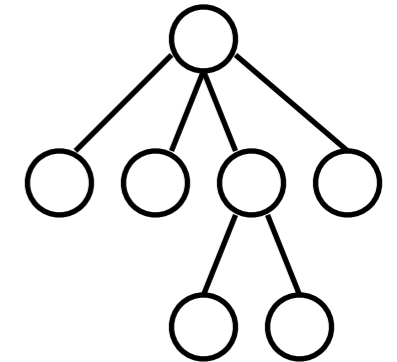
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 - ✓ clear chain of responsibility
 - ✓ people are used to it
 - ✗ single point of failure at the commander
 - ✗ less or no sense of ownership by everyone



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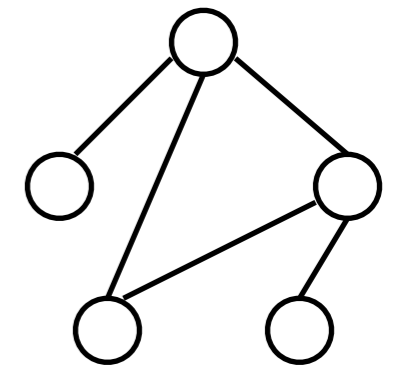
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- Communion model

- ✓ a community of leaders, each in his/her own domain
- ✓ inherent sense of ownership
- ✗ people aren't used to it (and this scares them)



Common team organization templates

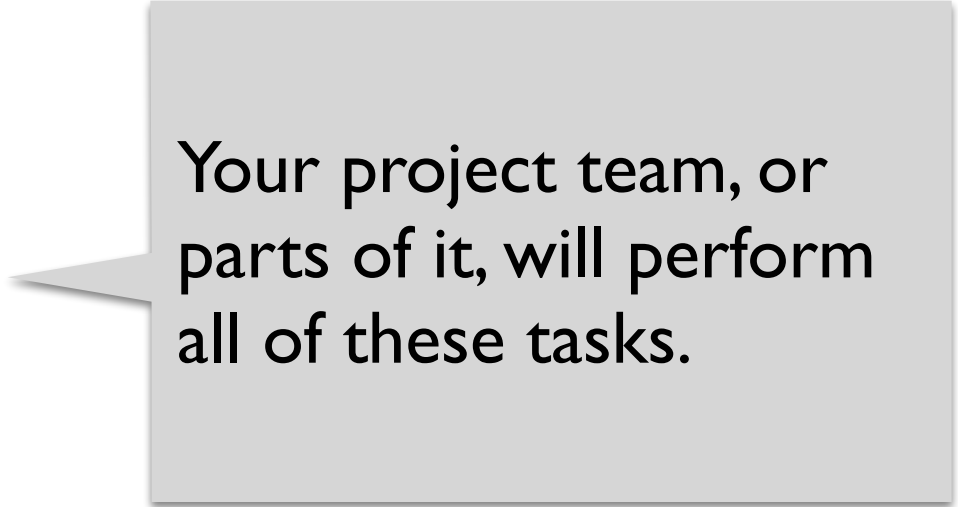
- **Business:** tech lead and a bunch of equal devs
- **Surgical / chief programmer:** lead dev does most of work
- **Skunk works:** just turn the devs loose
- **Feature:** divide work based on features of product
- **Search-and-rescue:** focused on a specific problem
- **SWAT:** skilled with a particular advanced tool(s)
- **Athletic:** carefully selected people w/ specialized roles
- **Theater:** "director" assigns roles to others

Organizing your team by functionality (1/2)

- Problem-resolution
 - A focused attack on specific bugs, problems, issues
- Creativity
 - Coming up with and exploring new ideas
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Your project team, or parts of it, will perform all of these tasks.

Organizing your team by functionality (2/2)

- Who will do the ...
 - scheduling? development? testing? documentation (spec, design, write-ups, presentations)? build/release preparation? inter-team communication? customer communication?
- **Pragmatic Programmer tip:**
"Organize around functionality, not job functions."

Team leadership and decision making

- Who makes the important big decisions in your team?
 - One person?
 - All, by unanimous consent?
 - All, by majority vote?
 - Other options?...
- Is this an **unspoken** or **explicit** agreement among team members?

Advice on decision making in 403

- Delegate to subteams when possible
- Let everyone give their input, even if some of it is off-track
- Write down pros/cons of alternatives (weighted?)
 - Evaluate costs, benefits, risks
- Have a clear procedure for resolving disagreement
 - Strive for consensus, but if it cannot be achieved, ...
 - Majority vote and PM decides on a tie; etc.
- Pareto analysis: find 20% of work that solves 80% of problem
- Compromise, compromise, compromise

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- **Prioritize** and order goals and TODOs
 - list them by urgency, by due date (or milestone date)
 - make sure to list group member(s) are responsible for which
 - make sure every group member has a significant role

work

motivation and productivity

Achieving productivity

Achieving productivity

- How can you get the most out of your team members?
 - give them specific, small, attainable goals that they can visualize
 - have frequent communication and updates
 - meet in person to work as much as possible
 - put people in small teams; minimize work done "solo"
 - build good team camaraderie

Achieving productivity

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 - put people in small teams; minimize work done "solo"
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- What can block people or stop them from making progress?
 - technical confusion: How do I start implementing that feature?
 - unclear responsibilities: Oh, am I supposed to do that?
 - unclear due dates: When was I supposed to have that done?
 - lack of milestones: But it's not due until next Friday!
 - laziness: Time to work on 403 ... Ooh look, Facebook!

Dealing with slackers



Dealing with slackers

- What do you do if a group member is slacking off instead of working?
 - check up on them frequently
 - give them less "solo" work:
 - put them in a sub-team of 2-3
 - have them meet more in person



Dealing with slackers

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 - check up on them frequently
 - give them less "solo" work:
 - put them in a sub-team of 2-3
 - have them meet more in person
- If the problem persists, then what?
 - have the PM intervene
 - a kind but firm email with concerns
 - an in-person meeting with PM and a few members
 - contact primary customer to let them know about potential issue



Dealing with slackers: email intervention

Hey Jim,

I was wondering if you finished the XYZ feature you were assigned yet? You were late on the ABC feature from the last phase so I thought I better email you. When you have time, please tell me when XYZ is done.

-- Ralph

Good or bad way to intervene?

Dealing with slackers: being quantitative

- Use specific, incremental goals, not just for things to be "done"
- List particular dates that results are expected
- Give an expected date/time to reply to a communication
- Don't be accusatory; offer support, help, gratitude as appropriate
- Remind about upcoming deadlines, meetings, key points

Dealing with slackers: a better email

Hey Jim,

How is your work on the XYZ going? It's due a week from Friday. Like we talked about at our last meeting, we are hoping to have the rough sketch of the first 2/3 of it by Sunday so we can go over it together. Please let me know by tomorrow night how much progress has been made. If you have any questions or need some assistance along the way, please let me know. We'll all meet Saturday in person and you can give us another update at that time. Thanks!

-- Ralph

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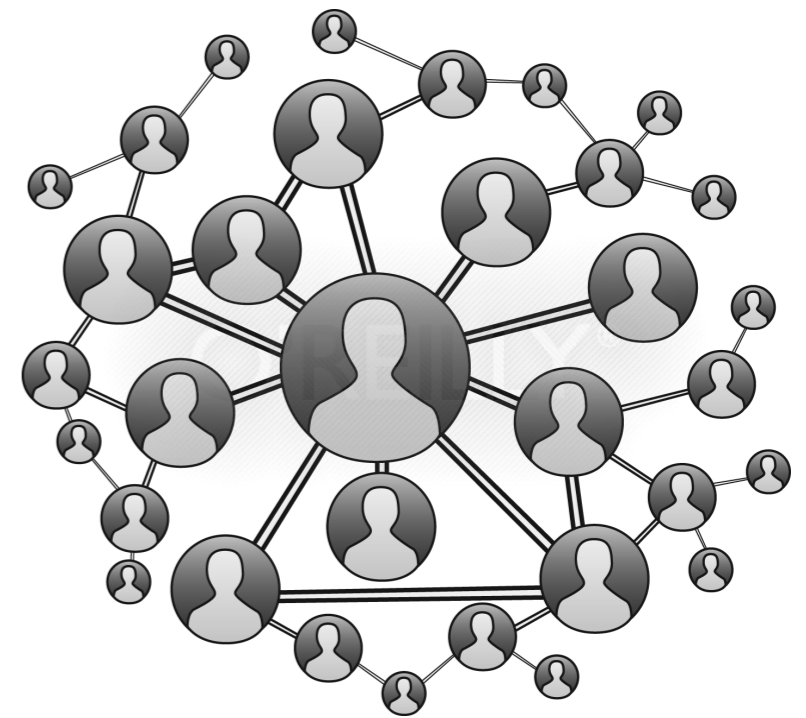
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- The goal is to improve problem and maintain positive group relations
 - It is possible to be critical without being harsh, rude, mean
 - It is often helpful to avoid the appearance of a I-on-I conflict
- Depersonalize by making it about all group members, not one
 - PM can speak on behalf of other group members
 - "We" are concerned about XYZ, not "I"
 - "We" are a little behind, so let's all meet in person in the lab today

talk

communication

Communication: hard but essential

- Communication requirements increase with increasing numbers of people
- Everybody to everybody: quadratic cost
- Every attempt to communicate is a chance to mis-communicate
- But not communicating will guarantee mis-communicating



Communication: running an effective meeting

- Email an agenda of topics to discuss ahead of time
- Each member/subgroup reports its progress
- Get an update on every current work item
- Take notes on decisions made and post them to wiki, etc.
- Have whiteboard/paper handy for sketching out ideas
- Keep everyone's attention, ban laptops / cell phones
- Walk away with a clear plan of action, set of TODOs



Communication: meeting gotchas

- Be professional: don't tolerate lateness, lack of focus
- PM should manage on-task discussion
- Don't ignore a group member's input
 - even if you don't go forward with their idea, listen to it
- Don't let it run too long (people hate long meetings)
 - if still running over, stop and save some for next time
 - agree to discuss some issues over email if necessary
- Don't "meet just to meet"
 - if you have nothing to discuss, make it a "work meeting" in the lab or cancel the meeting altogether
 - don't use meetings for one-way flow of information (email)



Summary

- Organization
 - Dominion vs communion
- Decision making
 - Write it all down, be specific, prioritize
- Motivation
 - Practice positive reinforcement
- Communication
 - Face-to-face is most effective

