Lecture 22: Managing People

Organizational Structures

Building high Performance teams

Dealing with problems with team assignments

Discussion: Poisonous People

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Starting point

You have a project

You have been given a team

- a mixed set of skills
- a mixed set of motivations

Problem:

- How do you get everyone to work together?
- …and get the job done?

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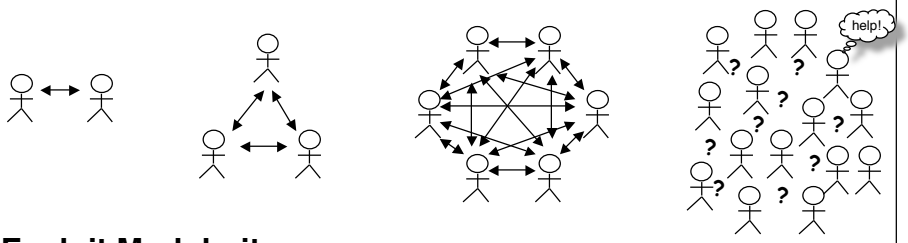
Scaling up…

Communication overhead is exponential



Exploit Modularity:

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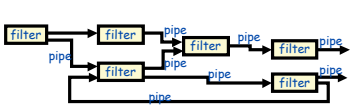
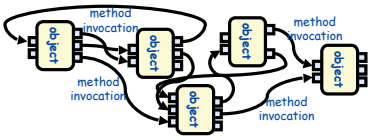
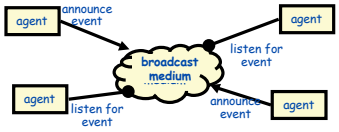
Team Organization

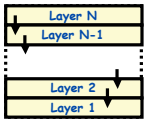


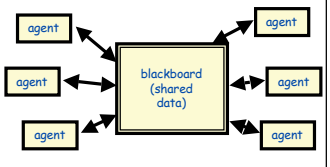


Conway's Law:

The structure of the software reflects
the structure of the organisation that built it







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Coordination Mechanisms

Direct supervision
- simple structure - little formalization

Standardization of work processes
- "machine bureaucracy" e.g. mass production and assembly

Standardization of work outputs
- "divisionalized form" e.g. each division has performance targets

Standardization of worker skills
- "professional bureaucracy" e.g. hospitals, law firms,…

Mutual adjustment
- "adhocracy" e.g. skunkworks, high innovation, open source teams

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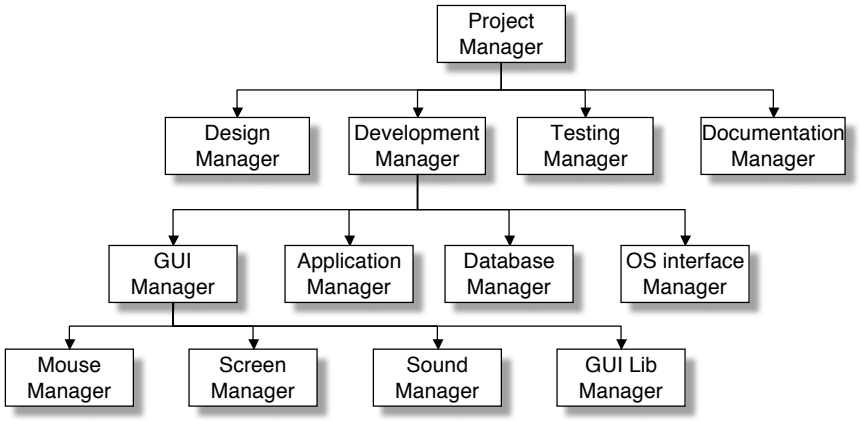
Hierarchical Teams

Team structure = top down decomposition
- Disadvantage: vertical communication is ineffective



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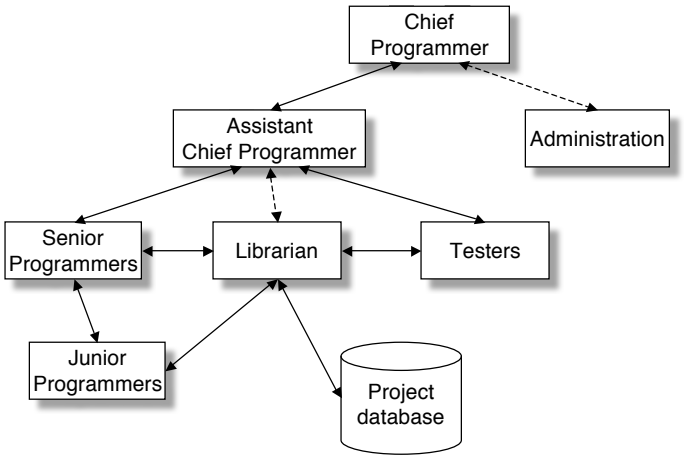
Chief Programmer Teams

Based on hospital surgical teams

Chief programmer is not a manager - concentrates on technical issues



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Matrix Organization

Identify specific skill sets

Assign people to projects according to needed skills

People work on multiple projects

	real-time program-ming	graphics	data-bases	QA	Testing
Project 1	X			X	X
Project 2	X		X	X	X
Project 3		X	X	X	X

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Open Source - Onion Model

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General Principles

Use fewer, better people

- Performance of best programmers better by an order of magnitude!

Fit tasks to capabilities and motivations of people

Help people to get the most out of themselves

- opportunity to accept new challenges and be rewarded

Balance the team

- E.g. team players vs. star performers
- Practice "egoless" programming

Remove people who do not fit the team

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High Performance Teams

Nurture a team culture

- A team is not a family
- Team members help one another, but don't tolerate freeloaders

Instill the right values

- Discuss examples
- Reward people who uphold the team values

Build trust

- all feedback is constructive
- lively & healthy debate about issues and risks

Effective Communication

- Use face-to-face whenever possible
- Use phone or F2F to resolve email debates
- Get everyone using IM
- Encourage social events for the team
- Physical layout of office space is important

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Organizational Clarity

Things every team member should know:

- What is the mission of the team?
- What is the vision for the system to be delivered?
- How will you measure team success?
- Who are the project stakeholders?
- How will you measure project success?
- Who is responsible for what?
- What procedures should you follow to do the work?

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Who can change the code?

Collective Ownership

- Anyone can change any code or model
- Works well for small teams
- Promotes shared responsibility
- (Needs good version management tools)

Change Control

- Each sub-team can only change their subsystem
- Reduces unexpected problems when code changed by others
- Promotes development of expertise
- More important on larger projects

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Poisonous People: Anna

Anna knows more about every subject than everyone else on the team put together…

- …at least, she thinks she does.
- No matter what you say, she'll correct you;
- no matter what you know, she knows better.
- "Anna"s are pretty easy to spot: if you keep track in team meetings of how often people interrupt one another, her score is usually higher than everyone else's put together.

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Poisonous People: Bao

Bao is a contrarian:

- no matter what anyone says, he'll take the opposite side.
- This is healthy in small doses, but when Bao does it, there's always another objection lurking behind the first half dozen.

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Poisonous People: Caitlin

Caitlin lacks confidence…

- She has so little confidence in her own ability (despite her good grades) that she won't make any decision, no matter how small, until she has checked with someone else.
- Everything has to be spelled out in detail for her so that there's no possibility of her getting anything wrong.

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Poisonous People: Frank

Frank believes that knowledge is power.

- He enjoys knowing things that other people don't
- To be more accurate, he enjoys it when people know he knows things they don't.
- Frank can actually make things work, but when asked how he did it, he'll grin and say, "Oh, I'm sure you can figure it out."

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Poisonous People: Hediyeh

Hediyeh is quiet. Very quiet.

- She never speaks up in meetings, even when she knows that what other people are saying is wrong.
- She might contribute to the mailing list, but she's very sensitive to criticism, and will always back down rather than defending her point of view.
- Hediyeh isn't a troublemaker, but rather a lost opportunity.

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Poisonous People: Kenny

Kenny is a hitchhiker.

- He has discovered that most people would rather shoulder some extra work than snitch, and he takes advantage of it at every turn.
- The frustrating thing is that he's so damn plausible when someone finally does confront him:
- "There have been mistakes on all sides," he says, or, "Well, I think you're nit-picking."
- The only way to deal with Kenny is to stand up to him: remember, if he's not doing his share, he's the bad guy, not you.

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Poisonous People: Melissa

Melissa would easily have made the varsity procrastination team if she'd bothered to show up to tryouts.

- She means well---she really does feel bad about letting people down---but somehow something always comes up.
- Her tasks are never finished until the last possible moment.
- Of course, that means that everyone who is depending on her can't do their work until after the last possible moment...

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Poisonous People: Petra

Petra's favorite phrase is "why don't we?"

- Why don't we write a GUI to help people edit the program's configuration files?
- Hey, why don't we invent our own little language for designing GUIs?
- Her energy and enthusiasm are hard to argue with, but argue you must.
- Otherwise, for every step you move forward, the project's goalposts will recede by two.
- This is called feature creep, and has ruined many projects that might otherwise have delivered something small, but useful.

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Poisonous People: Raj

Raj is rude.

- "It's just the way I talk," he says.
- "If you can't hack it, maybe you should find another team."
- His favorite phrase is, "That's stupid," and he uses obscenity as casually as minor characters in Tarantino films.
- His only redeeming grace is that he can't dissemble in front of the instructor as well as Kenny, so he's easier to get rid of.

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Poisonous People: Sergei

Sergei is simply incompetent.

- He doesn't understand the problem.
- He hasn't bothered to master the tools and libraries he's supposed to be using.
- The code he checks in doesn't compile
- His thirty-second bug fixes introduce more problems than they solve.
- If he means well, try to re-partition the work so that he'll do less damage. If he doesn't, he should be treated like any other hitchhiker.

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