

## Student Startup Sequence

- Verify network connection
- Rotate to Landscape mode
- Start Presenter 2.0
- Maximize Application
- Role->Student
- Connect->Classroom 1
- Test student submissions
- Draw something here
- Select All
- Send Selection



## CSE 403 Lecture 4

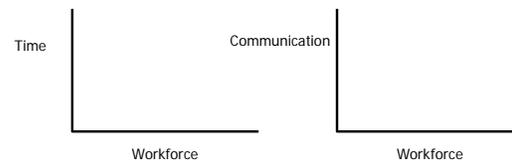
Software Teams

## Announcements

- Reading Assignment
  - Mythical Man Month, Chapters 4-6
  - Read Chapter 4 before Wednesday
- Recommended book (if you find this stuff interesting)
  - Rapid development
  - Steve McConnell

## Lecture Recap

- Team Size



## $O(n^2)$ Communication graph

## Draw an $O(n)$ communication graph

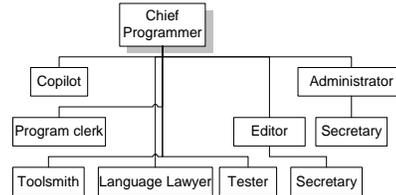
- Support full communication in team of size  $n$

## Team structure

- Many different models

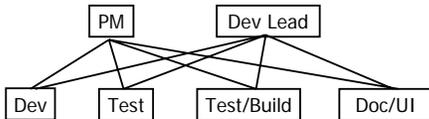
## Software development teams

- Brooks
  - Surgeon team



## Chief programmer team

- Key points
  - Technical leadership
  - Technical lead has direct development responsibilities



## Team Construction Class Exercise

- Select six individuals from the list to form a software team
- The product is a homework management and grading system
- Pick a team that will maximize your chances of project success
- Budget constraints limit your choices

## Attributes 1 to 5 scale

- Job Class: PM, Developer, Test
- Cost: A, B, C
- Job Class specific
  - Communication (PM)
  - Programming Ability (Dev)
  - Technology Understanding (Test)
- General
  - Charisma (Leadership, External interactions)
  - Congeniality (Getting along with team members)
  - Reliability

Choose 6 Team members, at most 2 A's, and at least 1 C

	Job	Comm	Prog	Tech	Char	Cong	Rel
1	PM A	5	1	1	5	4	4
2	PM B	4	2	2	4	3	4
3	PM B	4	2	3	3	5	3
4	PM C	3	2	2	3	3	3
5	Dev A	2	5	4	1	1	3
6	Dev A	3	4	3	4	4	3
7	Dev A	1	4	4	2	3	5
8	Dev B	2	4	3	2	2	3
9	Dev B	3	3	3	3	4	4
10	Dev C	2	3	3	2	4	1
11	Dev C	2	3	2	1	2	4
12	Test A	3	3	5	5	4	5
13	Test B	2	3	4	3	3	3
14	Test B	3	2	4	1	4	4
15	Test C	2	2	3	3	2	3

Main factors in your choices:

## Successful software teams

- Studies show a 10 to 1 difference in productivity of programmers
- Equal differences observed in productivity of teams
- Substantial differences observed in performances of teams *even when the strength of the programmers is equivalent*

## What makes a successful team?

- Shared, elevating vision or goal
- Team identity
- Results driven structure
- Competent team members
- Commitment to the team
- Mutual trust
- Interdependence among team members
- Effective communication
- Sense of autonomy
- Sense of empowerment
- Small team size
- High level of enjoyment

## Team building

- Team members derive satisfaction from the team's accomplishments
- Important to both
  - Reward the team's success
  - Maintain individual accountability

## Motivation

- Motivation is undoubtedly the single greatest influence on how well people perform. Most productivity studies have found that motivation has a stronger influence on productivity than any other factor. (Boehm 1981)

## List three important motivation factors

Select the five most important motivation factors

Achievement	Achievement	Achievement
Recognition	Recognition	Recognition
Work itself	Work itself	Work itself
Advancement	Advancement	Advancement
Salary	Salary	Salary
Possibility for growth	Possibility for growth	Possibility for growth
Interpersonal relationships, subordinate	Interpersonal relationships, subordinate	Interpersonal relationships, subordinate
Status	Status	Status
Interpersonal relationships, superior	Interpersonal relationships, superior	Interpersonal relationships, superior
Interpersonal relationships, peers	Interpersonal relationships, peers	Interpersonal relationships, peers
Technical-supervision opportunities	Technical-supervision opportunities	Technical-supervision opportunities
Company policies	Company policies	Company policies
Working conditions	Working conditions	Working conditions
Personal life	Personal life	Personal life
Job security	Job security	Job security
Responsibility	Responsibility	Responsibility



## Top five motivation factors

- Achievement
  - Ownership
  - Goal setting
- Possibility for Growth
- Work itself
  - Skill variety
  - Task identity
  - Task significance
  - Autonomy
  - Job feedback



## Top five motivation factors

- Opportunity to focus on the work itself
  - Reduce administration
  - Remove obstacles
- Personal life
- Technical-supervision opportunity
  - Assign each developer to be technical lead for some particular product area



## How not to manage: Morale killers

- Management manipulation
- Excessive scheduling pressure
- Lack of appreciation for team member's efforts
- Inappropriate involvement of technically inept management
- Not involving team members in decisions that affect them
- Productivity barriers
- Low quality
- Heavy handed motivation campaigns
- Frequent changes in direction



## Student Project Teams

- I've observed a high success rate
- But failures happen . . .