Software Development Teams

Talent wins games, but teamwork and intelligence wins championships.

Michael Jordan

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With some material from Razmov 403 lectures.
Readings

- Pragmatic Programmer, p. 224-230
- Software Project Survival Guide, p.103-107
- Rapid Development by Steve McConnell handout, Guidelines for Team members, p. 295
Outline

- What contributes to a high performance team
- What are your expectations of team performance and success
- Team organization
First, what is a team?

A **group** is a collection of individuals with a common interest

whereas

A **team** is a cohesive coalition of individuals working together towards a common goal
Another definition

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

There is no “I” in “TEAMWORK”
Why have teams?

• Having more people has benefits (that can be exploited)
  o Attack bigger problems in a short period of time
  o Utilize the collective experience of everyone

• Having more people has risks too
  • Miscommunication of expectations, designs, assumptions, …
  • “Fluid” (or lack of) responsibility for tasks
  • Conflict/mistrust between team members
More on communication

Do not underestimate the power of communication!

Communication requirements increase with increasing numbers of people
- everybody to everybody $\rightarrow \frac{n(n - 1)}{2}$
- even just somebody to everybody $\rightarrow n - 1$

Every effort at communication is a chance for miscommunication
What affects team success?

- Presence of a shared mission and goals
- Motivation and commitment of team members
- Experience level
  - ... and presence of experienced members
- Team size, organization and open atmosphere
  - ... and results-driven structure
- Reward structure within the team
  - ... incentives, enjoyment, empowerment (ownership, autonomy)
- Continual monitoring of progress and direction
  - ... and adjusting when necessary
Results-driven structures have:

1. **Clear roles and responsibilities**
   - Each person knows and is accountable for their work
2. **Monitor individual performance**
   - Who is doing what, are we getting the work done?
3. **Effective communication system**
   - Available, credible, tracking of issues, decisions
4. **Fact based decisions**
   - Focus on the facts, not the politics, personalities, …
Team exercise

Part of being successful is having a shared vision. This applies to team operation, too.

For your 403 team:

1. What are the *top 5* responsibilities of a team member? Write in terms of, “I will ....”

2. What criteria will you use to determine if your team is successful?
Team member responsibilities

- From Sp07
  - I will do my work on time or give sufficient notice (backed by some personal contact)
  - I will value others opinions
  - I will collaborate with all teammates for making major decisions
  - I will do what I say I will
  - I will not start fights
  - I will respond constructively to feedback
  - I will attend to all meetings and bring refreshments to some meetings
  - I will not hesitate to voice my opinion
  - I will stand behind and support team decisions
Team Member Responsibilities

• See also the handout (Practical Guidelines for Team Members and Leaders)

• Here are a few pragmatic ones:
  o I will attend team meetings on time
  o I will respond to email within a day
  o I will meet my commitments, or will ask for help early/as soon as I think there may be a problem
  o I will speak up in a constructive manner if I have an issue. I will respond constructively to feedback of others.
Successful team criteria

- From Sp07:
  - Your group project grade
  - Product is complete and works as scoped
  - Team members are still communicating/friends
  - Met deadlines, our expectations, and specifications
  - Team members are content
  - Noone is burnt out
  - The customer is well satisfied with the product
  - Every team member contributed
  - Noone switched to English major
By 10pm Wednesday

- Each team please email me (alverson@cs.washington.edu) your:
  - Top 5 member responsibilities
  - Top 3 success criteria

Will your team be as successful as the early Microsoft team??
Team member input survey

- Coming your way soon (Friday)
- You will be providing input to me on how well your team members are meeting expectations
Establishing a high performance team

Typically teams go through 4 stages:
1. **Forming**
   - Exploration period, cautious and guarded, exploring boundaries
2. **Storming**
   - Deals with issues of power, control, leadership
3. **Norming**
   - Establish cohesiveness among team members
   - Appreciate differences, trust begins to evolve
4. **Performing**
   - Full functioning of team
   - Leadership is participative and shared
   - Sense of identity and high level of work accomplishment
How can we start “performing” faster?

- **Forming stage**
  - Clarify team’s purpose and goals
  - Clarify responsibility of each member
  - Validate skills each team member brings
  - Identify communication methods

- **Storming**
  - Establish norms of discussions
  - Model openness in resolving conflict
  - Ensure everyone participates on all key issues

- **Norming**
  - Let members take on more responsibility as productivity increases
  - Chart progress! Reward successes!
  - Reduce meeting time as things become smooth
Good team quote #2

We must all hang together or assuredly, we shall all hang separately.

Ben Franklin
If a team is to reach its potential, each member must be willing to subordinate his personal goals to the good of the team.

Bud Wilkinson
Let’s look at software team structures

- Typically, software development teams include:
  - Several “developers” in a broad sense: programmers, testers, integrators
  - A person with lead developer/architect responsibilities
  - A person with functional management responsibilities
  - A person with project management responsibilities

- These could be *all different* team members, or there could be a large amount of overlap.
Specifically for your team...

- Who will do the scheduling/planning?
- Who will do the development?
- Who will do the integration?
- Who will do the unit, system, user testing?
- Who will do the documentation?
  - Includes spec, design, write-ups, presentations, ...
- Who will do the build/release preparation?
- Who will take care of inter-team communication?
- Who will do the customer communication?
- Who will do ...?
More on team organization

Pragmatic Programmer Tip:
“Organize Around Functionality, Not Job Functions”

- What are some benefits of organizing teams around:
  - … functionality?
  - … job functions?

- In what context(s) might the former be superior?
Some special teams

- Tiger team
  - Small team to tackle short high priority (often investigation type) topics

- Skunk works team
  - Creativity with free reign

- SWAT team
  - Skilled With Advanced Tools – tackle tough problems
Dilbert, I got a new member for your project team.

My name is Ron but everyone calls me Mo. I don't know why.

Mo, why is your shirt on backward?

What??! Again??!

Stand back. I'll try to fix it by quickly turning around.

Aaagh! Hu-aaah!

Oh, great. Now Dilbert is gone. I must have entered another dimension.

Please tell me that his pay is lower than mine.

I love this part.