L9: Teams and teamwork

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Motivation

Why teams?

- Engineering projects are far too large to be carried out by a single person ⇒ must work on team
- High-performance teams can outperform equal number of individuals working in isolation
- Employers desire it – consistently listed as one of the top skills required of engineers!
What is a team?

“A small group of people with complementary skills, who are committed to a common performance, performance goals, and approach for which they hold themselves mutually accountable.” – Katzenbach and Smith, 1993

- **Small, typically 2-10 people**
  - Larger than that it becomes very difficult to manage
  - Think of the # relationships in an n-person team: $n(n - 1)/2$
- **Complementary skills**
  - Cross functional: engineering, marketing, manufacturing...
  - Cross disciplinary: engineering, life sciences, liberal arts...
- **Common performance goals**
  - Without them, there is no need for a team
- **Common approach...**
  - To solving technical problems and hold members accountable
Stages of team development

Forming
- The team is created
- Members may not know each other, may be anxious or uncomfortable

Storming
- Team works to develop objectives and define individual roles
- Conflict may appear as team resolves individual vs. group goals

Norming
- The team starts to become cohesive
- Members accept team’s objective, procedures, and individual roles

Performing
- Team focuses on performing tasks and achieving objectives
- Disagreements are resolved by the team’s norms

Adjourning
- The team dissolves, hopefully as a result of success
Working group
- No significant incremental performance needs that would require the group to become a team
  - Individuals work in isolation and meet occasionally to exchange information

Pseudo-team
- There could be a performance need, but the group has not focused on collective performance and is not really trying to achieve it

Potential team
- There is a performance need, and the group is trying to improve its performance, but it still requires
  - More clarity about purpose, goals
  - More discipline to define a common working approach
  - A mechanism to collective accountability

Real team
- A small group of people with complementary skills who are equally committed to a common purpose, performance goals and working approach for which they hold themselves mutually accountable

High-performance team
- A real team whose members are also deeply committed to one another’s personal growth and success
Characteristics of real teams

How to become a real team

– There is no set process that guarantees a team becomes a real team
– Real teams, however, apply teamwork principles that we review here
  • Applying teamwork principles does not guarantee but improves the odds a team will become a real team

Characteristics

– Select team members based upon skills
– Identify and agree upon objectives upon objectives
– Make it CLEAR how the team will make decisions!
– Hold effective meetings
– Determine team roles
– Assign tasks and responsibilities
– Spend a lot of time together
– Respect team members
– Manage conflicts constructively
Select team members based upon skills

– Three categories of relevant skills
  • Technical and functional
  • Problem solving
  • Interpersonal

– Personality or temperament tests may assist in the process

– Self selected vs. appointed teams... which one is better?
  • In self-selected teams, members are more likely to believe the team objectives are important, but may not pay enough attention to skills necessary to complete the project
  • In appointed teams, the person appointing the team can balanced skills more easily, but team members may be dissatisfied with their project assignment
Identify objectives

- Teams are created to achieve shared goals
- If goals are not well-defined, the motivation for the team is unclear
- That’s why the problem statement and requirements specifications are so important
  - The problem statement describes the overarching objective
  - The requirement specs set verifiable targets that define success
- The team must achieve consensus about both
Develop decision-making guidelines

- **By authority**: leader makes decision w/o consultation; only effective for fast decision making
- **Expert member**: effective when only one member has the expertise
- **Average member opinion**: needs a method to compute average
- **Decision by authority after discussion**: team discusses, leader decides
- **Minority control**: a few members form a subcommittee to decide
- **Majority control**: everyone votes, majority wins
- **Consensus**: all team members must agree to and commit to the decision.
  - The best approach but time consuming
  - Only necessary for important decisions
Hold effective meetings

– Have an agenda
– Show up prepared
– Pay attention
– Agree on meeting time and place
– Summarize (meeting minutes)

Develop team roles

– **Administrative**: leader, scribe, project manager, procurement...
– **Technical**: hardware, software, interfaces, testing...

Assign tasks and responsibilities

– Each team member must have clear responsibilities and tasks
– Workload must be distributed fairly
– See chapter 10 for guidelines
Spend a lot of time together

– Strong correlation between time together and success
  • Meetings
  • Joint work
  • Extracurricular

Respect each other

– Listen actively: formulate responses after (not during) listening
– Consider how you respond to others
– Constructively criticize ideas, not people
– Respect those not present
– Communicate your ideas
Manage conflicts constructively

- Focus on performance and ideas, not on individual personality
- Keep calm & listen
- Identify concerns, rather than hide them
- Apply the team’s process guidelines (next)
- Develop a plan to resolve the conflict
- Mediation

1) Each member supplies anonymously a description of the conflict and suggested remedies to the mediator
2) Mediator proposes a solution
3) Team members can suggest modifications
4) Steps 1-3 are repeated until consensus is reached
Team process guidelines (needed on your proposal)

- The team’s name
- Team’s mission and objectives
- Decision making guidelines
- Meeting guidelines
- Team roles
- Conflict resolution

- See checklist on table 9.1
Case study

Boeing’s code of cooperation
  – Every member responsible for team’s progress and success
  – Attend all meetings, be on time
  – Come prepared
  – Carry out assignments on schedule
  – Listen to and show respect for others’ contributions; be an active listener
  – Constructively criticize ideas, not persons
  – Resolve conflicts constructively
  – Pay attention; avoid disruptive behavior

Boeing’s code of conduct
  – No disruptive side conversations
  – Only one person speaks at a time
  – Everyone participates; no one dominates
  – Be succinct; avoid long anecdotes and examples
  – No rank in the room
  – Respect those not present
  – Ask questions when you do not understand.
  – Have fun