Project Teams

CSE 403, Spring 2004

Software Engineering

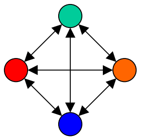
http://www.cs.washington.edu/education/courses/403/04sp/

Readings and References

- Readings
  - » *Rapid Development*, Steve McConnell
    - Chapter 4, Software Development Fundamentals
    - Chapter 12, Teamwork
    - Chapter 13, Team Structure
- References
  - » *The Mythical Man-Month*, Brooks
    - Chapter 3, The Surgical Team

Issues

- Most projects need teams of people for success
  - » many skills required
  - » time is limited
- Communication requirements increase with increasing numbers of people
  - » everybody to everybody → $\frac{n(n-1)}{2}$
  - » even just somebody to everybody → n-1
- Every effort at communication is a chance for miscommunication



Take risks, but manage them

- The need for many people exposes us to risk
- What are the tools that we use to manage it?
  - » Good, well-known product definition
  - » Planning and organization
  - » Monitoring and direction as needed
    - we have a plan
    - we'll work to the plan and monitor our performance
    - we'll change the plan if we need to
  - » Transparency - no secrets

Management Fundamentals: Planning

- “We have a plan”
- Estimation and scheduling
- How many people with what skills, when?
- Organization of the team
- Lifecycle events
- Managing the risks
- Strategic decisions
  - » for example, build or buy decisions

Management Fundamentals: Tracking

- “We’ll work to the plan and monitor our performance”
- Some tools
  - » Task lists, status meetings, status reports, milestone reviews, budget reviews
- Management by walking around
- “We’ll change the plan if we need to”
  - » Can only be effective if all the facts are known

Management Fundamentals: Measurement

- Help validate comparisons between this project and previous/future work
- Basic measurements of the code
  - » Non Commenting Source Statements (NCSS)
  - » Number of modules, packages
- Project build: success and frequency
- Change and defect data
- Be careful: we optimize to the metric in use

Teamwork and Organization

- Teams of people can achieve big goals
  - » Panama Canal, man in space, Mt. Everest
  - » but it ain’t easy
- The members of a good team
  - » know what the goals of the team are
  - » know what their own task responsibilities are
  - » have the tools they need to accomplish their tasks
  - » have reason to believe that the team will succeed

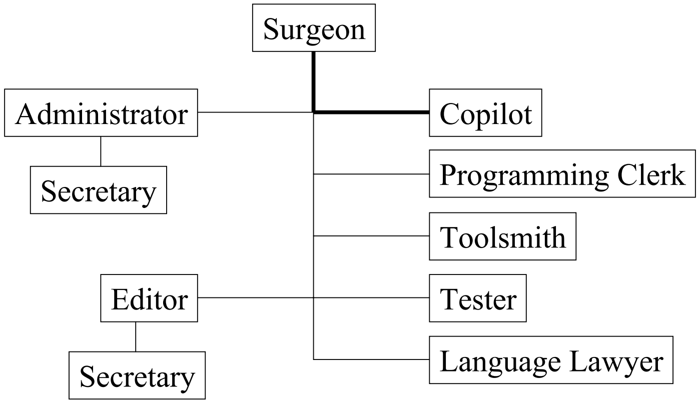
Results-driven Structure

- Roles are clear within the team
  - » Each person is accountable for their work
- Effective communication system
  - » Change management, schedule, tracking, decisions
- Monitor individual performance
  - » Who is doing what, are we getting the work done?
- Fact based decisions
  - » Focus on the facts, not the personalities

Team Models

- Business Team
  - » peer group headed by technical lead
- Chief Programmer Team
  - » Brooks' surgical team - surgeon plus support
- Skunkworks team
  - » Black box, creative but maybe ad-hoc
- Feature team, Search-and-Rescue team, SWAT team, Professional Athletic team, Theater team, etc, etc

Brooks: Surgical Team



Surgeon

Administrator

Secretary

Editor

Secretary

Copilot

Programming Clerk

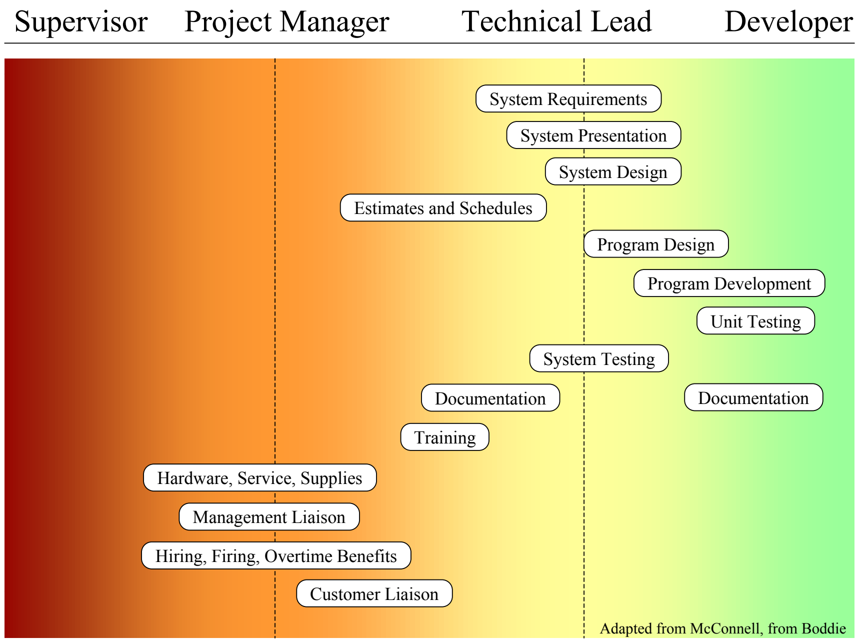
Toolsmith

Tester

Language Lawyer

Managers and Technical Leads

- No matter what you call the structure, teams usually have:
  - » several "regular" developers
  - » a technical lead developer
  - » a project management function, assigned to:
    - the technical lead
    - a separate project manager
    - the group supervisor
    - ...



Supervisor

Project Manager

Technical Lead

Developer

System Requirements

System Presentation

System Design

Estimates and Schedules

Program Design

Program Development

Unit Testing

System Testing

Documentation

Documentation

Training

Hardware, Service, Supplies

Management Liaison

Hiring, Firing, Overtime Benefits

Customer Liaison

Adapted from McConnell, from Boddie

Responsibility

- Take individual responsibility for your tasks
- In order to succeed, the team must
  - » Decide what the tasks are
    - task content, interfaces, order, ...
  - » Clearly define who is going to do each task
  - » “Sign up” to do them
  - » Let ‘er rip
- Communicate as you go