Global Software Development

Intro

Co-ordination: [...]

Communication: The exchange of complete and unambiguous information – that the sender and receiver can reach a common understanding.

Control: The process of adhering to goals, policies, standards, or quality levels.

Outsourcing

There are benefits and drawbacks to distance, which can be divided among temporal distance, geographical distance, and sociocultural distance.

[...]

Distributed Teams

You can have a different team in each location, or you can have virtual teams, which span locations. These contrast with co-located teams.

Co-located Teams

- Frequent interactions, both formal and informal
- Everybody knows everybody
- Not much miscommunication
- Awareness of what others are doing
- Trust among team members (from knowing them and hanging out with them)
- Shared understanding of the product

Team per Location

- Typically only formal interactions / planned meetings
- Teams may not have met each other
- Miscommunication
- Teams don't know what each other is doing
- Teams have no reason to trust one another
- No shared understanding

Conference Calls

Conference calls don't really solve this problem very well.

Brooks' Law

Adding more manpower to a project that is already late makes it later.

Reasons

1. Ramp-up time: It takes time for people to become productive on a project.
    - They need to become familiar with the project.
    - People will actually start out negatively affecting productivity.
2. Combination overheads: As you add more people you greatly increase the number of communication channels.
3. Limited divisibility of tasks: Tasks can only be decomposed to a certain level – after that people get in each other's way

Conway's Law

Any organisation that designs a system will produce a system whose structure is a copy of the organisation's communication structure.

Example

A contract research organisation had eight people who were to produce a COBOL compiler and an ALGOL compiler.

After some initial estimates of difficulty and time, five people were assigned to the COBOL job and three to the ALGOL job.

The COBOL compiler ran in five phases, and the ALGOL compiler ran in three.

Explaining

Modules tend to be allocated to specific teams.

If two modules are interdependent, and there's a different team for each module, the teams must negotiate an interface so that the modules can work together.

Implications

- Organising design teams means that certain design decisions have already been made.
- A higher level of organisational distribution leads to a more modular product design.
- Once interfaces are established, you must continue to communicate and co-ordinate.
- If you want to change the architecture, you must also change the organisation.

[...]