Technologies and social practices to help distributed teams

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Many teams are distributed
- In space
- In time

What’s hard about working in a distributed team

What technologies can help
- Kinds of technologies

Resources to help
Based on....

- 20 years of experience studying distributed science teams
- Literature from business, sociology, informatics, ....
Many teams in science are distributed

- Large science begets distance

- Distance presents challenges
Even collocated teams require technology help

- Asynchronous work
  - Project management
  - Data repositories
  - Shared computational resources
More than 30 meters apart
- Different floors of a building
- Different buildings on campus
The Challenges of Distance

- Blind and invisible
  - Lose awareness
- Time zone differences
- Crossing institutions
- Crossing cultural boundaries
- Uneven distribution begets power differences

- Technologies can help
  - but they need appropriate social practices surrounding them
Kinds of technologies

- Communication
  - Synchronous or near
  - Coordination

- Information Repositories
  - Coordination
  - Asynchronous

Infrastructure
Communication

- Email
- Texting
- Audio conferencing
- Video conferencing
Communication

- Chat
- Forum
- Blog
- Wiki

- Virtual Worlds
Coordination

- Shared calendars
- Awareness tools

Another collaborative project, the Collaboration Consortium, is a multinational industry workgroup, sponsored by Cisco Systems, that was chartered in 2009 to develop a Collaboration Framework™ to be deployed and rigorously evaluated in their own organizations. As an ongoing collaboration among 14 organizational representatives, they used the present version of the Wizard to assess their workgroup's own collaboration. Nine of the 14 representatives completed the CSW. In their 2011 annual report [2], their Wizard "experience" and our findings are summarized, as well as the changes they plan to make, which resulted from our analysis and their discussions of our findings. The Wizard afforded them the opportunity to reflect on their collaboration and redirect some aspects, which TOMSC identifies as a factor contributing to successful collaborations [11].

Across the healthcare projects that have used the CSW, we have collected more than 2000 completed responses. One project had too few responses to be representative (prompting a concerted effort to better understand what we can do to motivate participation once the leaders have decided it is important to assess the project). Here we summarize some of the themes across the five projects we have analyzed to date to date.

Common Strengths. Four of the five projects had very high levels of respect for the project manager or core leaders. People were generally thought to be collegial, helpful and collaborative (with one notable exception below). Two mentioned explicitly that they had a feeling of group self-efficacy, the ability to overcome obstacles as they arose. One of the projects with the highest self rating of success was high on all three kinds of trust (that others are responsive, do good work and will look out for their interests). Their goals were aligned, unlike many of the weaknesses reported in the other projects. Two were high on recognized
Coordination

- Meeting support
- Large visual displays
Coordination

- Workflow

- Resource scheduling
Information repositories

- Dropbox
- Sharepoint
- Google Drive
Information repositories
Computational Infrastructure

- System architecture
  - Private, secure machines
  - Massive data
    - ATLAS produces 23 petabytes per second
  - Standard office machines and servers
  - Cloud services
    - Each with their own behavioral consequences
Computational Infrastructure

- Computational resources
  - For high-end computational needs
    - NCAR develops these inhouse
    - NSF supporting these projects
    - GRID
  - For ordinary computation
    - Office technology
  - Human computation
    - Crowdsourcing
These don’t work without the right social practices

- Communication
  - Synchronous or near
  - Coordination
  - Infrastructure

- Information Repositories
  - Coordination
  - Asynchronous

Diagram showing the interconnection of communication, coordination, and infrastructure, highlighting the importance of social practices.
Resources
Thank you

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