Computer-Supported Cooperative Work

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05 October 2004
Projects

- Great ideas!
- Ron will announce pairs this afternoon
- We have cs147 students as study participants
- 1-page proposals due Monday 10/11 by noon
the study of how people work together using computer technology
Groupware

- **Groupware** denotes the technology that people use to work together
  - “systems that support groups of people engaged in a common task (or goal) and that provide an interface to a shared environment.”

- **CSCW** studies the use groupware
  - “CSCW is the study of the tools and techniques of groupware as well as their psychological, social, and organizational effects.”
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courtesy of marc rettig

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The Designers' Outpost
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Plasma Poster

CSCW
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<td>scavenger hunts</td>
<td>voting</td>
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<td>meeting room schedules</td>
<td>Groupware calendars</td>
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Workflow

- Documents carry meta-data that describes their flow through the organization:
  - Document X should be completed by Jill by 4/15
  - Doc X should then be reviewed by Amit by 4/22
  - Doc X should then be approved by Ziwei by 4/29
  - Doc X should finally be received by Don by 5/4

- The document “knows” its route. With the aid of the system, it will send reminders to its users, and then forward automatically at the time limit.
Knowledge repositories

- **AnswerGarden (Ackerman):** database of commonly-asked questions that grows automatically.

- User poses question as a text query:
  - System responds with matches from the database.
  - If user isn’t satisfied, system attempts to route query to an expert on the topic.
  - Expert receives query, answers it, adds answer to the database.
Extending email

- There is a lot of research on “email++”
  - Automatic organization
  - Task management
  - Other functions: contacts, reminders

- Multimedia email: Can include sound, video, images.
  - Only occasionally useful
  - May be important for developing economies.
Extensible Groupware: Lotus Notes

- Notes is a product that combines standard office software (email, calendar, contacts etc.) with a scriptable database backend.

- Easy to create new apps: PERT charts, novel workflow, custom shared authoring...

- “most successful groupware system to date”
Synchronous Groupware

- Desktop Conferencing (MS Netmeeting)
- Electronic Meeting Rooms (Access Grid)
- Media Spaces (Xerox PARC)
- Instant Messaging
Video

- Eye contact problems:
  - Offset from camera to screen
  - “Mona Lisa” effect

- Gesture has similar problems: trying pointing at something across a video link.
Sound

- Good for one-on-one communication

- Bad for meetings. Spatial localization is normally lost. Add to network delays and meeting regulation is very hard.
Turn-taking, back-channeling

- In a face-to-face meeting, people do a lot of self-management.
- Preparing to speak: lean forward, clear throat, shuffle paper.
- Unfortunately, these are subtle gestures which don’t pass well through today’s technology.
- Network delays make things much worse.
Social Issues

- Can these technologies replace human-human interaction?
  - can you send a “handshake” or a “hug”
  - how does intimacy survive?
- Are too many social cues lost?
  - facial expressions and body language for enthusiasm, disinterest, anger
  - will new cues develop? e.g., :)
Usage issues

- Our model of tele-communication is episodic, and derives from the economics of the telephone.

- Communication in the real world has both structured and unplanned episodes. Meeting by the Xerox machine.

- Also, much face-to-face communication is really side-by-side, with some artifact as the focus.
Solutions

- Sharing experiences is very important for mutual understanding in team work (attribution theory).

- So context-based displays (portholes) work well.

- Video shows rooms and hallways, not just people or seats.
Synchronous Implementation Issues

- Two users working on same data, at the same time, in cooperation
- Extend Model View Controller (MVC)
  - views & copies of the model are distributed
- Propagate command history
  - must resolve conflicts among N histories
  - at what level are commands?
    - mouse position not good enough (e.g., different font sizes, etc.)
Kiesler and Sproull findings:

- Participants talk more freely in email (than F2F).
- Participation is more equal in email.
- More proposals for action via email.
- Reduced effects of status/physical appearance.

But

- Longer decision times in email.
- More extreme remarks and flaming in email.
Some of this material is based on James Landay and John Canny’s course materials