Video-Mediated Communication

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Primary Sources / Readings

Papers in K. Finn, A. Sellen and S. Wilbur (Eds) Video-Mediated Communications. LEA Press. 1997

1. Whittaker, S. and O'Conaill, B. The Role of Vision in Face-to-Face and Mediated Communication.
2. Angiolillo, J., Blanchard, H., Israelski, E. and Mane, A. Technology Constraints of Video-Mediated Communication.
3. (optional) Isaacs, E. and Tang, J. Studying Video-Based Collaboration in Context: From Small Workgroups to Large Organizations.

4. (optional) Fish, R., Kraut, R. and Chalfonte, B. The VideoWindow System in Informal Communications. Proc. ACM CSCW'90. 1-11. 1990

Types of VMC Services

- Video Telephone
- Desktop Video Conferencing
- Group Systems
- Media Spaces and Special Purpose Systems

Desktop video chat: Macromedia

iPower Technologies Video Phone

Role of Vision In Communication

Role of vision in communication:

Why use visual information to facilitate communication?

Classes of Visual Information

- Participant Behavior
  - Gaze
  - Gesture
  - Facial Expression
  - Posture
- Visible Environment
  - Objects and Events in the collaborative environment
  - Availability

Communication Framework

- Process Coordination
  - Turn-taking cues
  - Availability cues
- Content Coordination
  - Reference
  - Feedback cues
  - Interpersonal cues

Hypotheses

- Nonverbal Communication
- Availability Information
- Visible Environment (Video as Data)

Hypothesis #1

- Nonverbal Communication
  - Cognitive cues for shared understanding
  - Cues to support turn-taking
  - Social cues and emotional information

Hypotheses

- Nonverbal Communication
- Availability Information
- Visible Environment (Video as Data)

Hypothesis #2

- Availability Information
  - Facilitation of unplanned communication
  - Glance
    - Ex. Montage System
  - Open Link
    - Ex. VideoWindow System

Hypotheses

- Nonverbal Communication
- Availability Information
- Visible Environment (Video as Data)

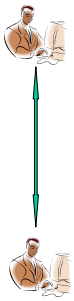
Hypothesis #3

- Visible Environment (Video as Data)
  - Information about shared work objects
  - Successful example: remote surgery
  - May also be useful for other design tasks

Technological Issues and Constraints

Life Cycle of a Video Call

- Set a call
- Capture sights and sounds of participants
- Process the image
- Transmission
- Display



Set A Call

- Basic operation
- Can be a barrier to participants willingness to use system
  - Spontaneity
  - System complexity

Capture

- Physical environment
- Camera
- Camera control
- Hands-free communication

Process the Image

- Transmitting sound and image is expensive!
  - 90,000,000 bps to deliver t.v. quality
- Compression and codecs
- Video standards and interoperability
- Audio delay and lip sync
- Video messaging

Transmission

- Choice of transmission lines
  - Analog or digital
  - Wire or wireless
  - Private or public switched
- Bandwidth is an issue for all

Display

- Display size
- Image attributes
- Local Views
- Eye contact/gaze awareness
- Sound quality
- Multipoint VMC

Other Problems

- Technology limitations may eventually be overcome
- Adoption of new video communication technology can not be done by a single user
- Needs to be widespread to be useful

The End!

Questions and Discussion?

"Eating one battery"

Fig. 1

"Eating five batteries"

Fig. 2