Case Study: Groupware
Course Wrap-up

Human Computer Interaction
CSCI 4620U| SOFE 4850U | CSCI 5540G

Dr. Christopher Collins

Acknowledgement:
Parts of this lecture are based on material by Jeremy Bradbury and www.usabilityfirst.com

ANNOUNCEMENTS

Announcements

- Outstanding assignments will be returned electronically during exams.
- Graduate students:
  - to submit a paper-based A2, please drop it to my office.
- Participation marks will be posted on Blackboard grade book during exams.

Today

- Case Study in:
  - Groupware / Computer Supported Cooperative Work
- Course wrap-up

HCI Case Studies

GROUPWARE

This section based on “Collaborative Software” from: http://www.usabilityfirst.com and Chapter 20 of course text

CSCW

- Computer supported cooperative work
- Still used but scope is much broader… perhaps "groupware" is better?
  - Not always cooperative
  - Not always work
  - Devices that are not traditionally called 'computers'
- Also related to CMC: computer-mediated communication

What is groupware?

- Examples of groupware include:
  - Google docs
  - Cacoo.com
  - Video conferencing software
  - Email
  - Desktop sharing
  - Social networking applications
- Other examples?

Why Groupware?

- to facilitate communication: make it faster, clearer, and more persuasive
- to enable communication where it wouldn't otherwise be possible
- to enable telecommuting
- to cut down on travel costs
- to bring together multiple perspectives and expertise

Source: http://www.usabilityfirst.com

Why Groupware?

- to form groups with common interests where it wouldn't be possible to gather a sufficient number of people face-to-face
- to save time and cost in coordinating group work
- to facilitate group problem-solving
- to enable new modes of communication, such as anonymous interchanges or structured interactions
- …

Source: http://www.usabilityfirst.com

Issues for cooperative working

- Social activity is fluid and nuanced which makes it technically difficult to construct systems.
- Members of organizations usually have differing and multiple goals, and conflicts and their resolutions may actually be an important part of cooperative working.
- Exceptional situations are a commonplace part of normal working. Job roles are often informal.
- People like to know who else is in shared workspaces. People use this awareness to guide their own work.

Issues for cooperative working

- People learn to cooperate by observing and participating in communication and information exchange.
- How CSCW is used is a result of negotiation within the groups themselves.
- CSCW relies on a critical mass of people if it is to be effective.
- Co-evolution is an important factor in CSCW. We learn to adapt to the configuration of a technical system and we adapt the system to suit our needs.
- Incentives are centrally important. People will not cooperate unless there is something in it for them.

Grudin's Eight challenges for CSCW

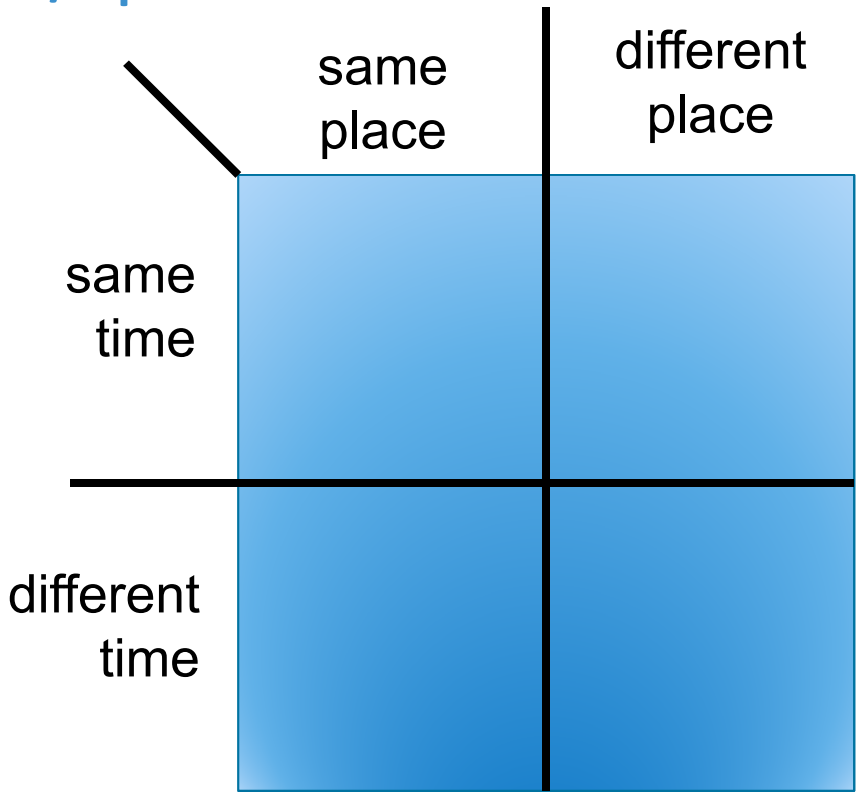
1. The disparity between who does the work and who gets the benefit
2. Critical mass - CSCW needs a critical mass of people to participate
3. Social, political and motivational factors - Work is not a just a rational activity, but a socially constructed practice, with all the shifting, conflicting motivations and politicking that this implies.
4. Exception handling in workgroups - work is social, and is supported by informal procedures as well as formal ones.

Grudin's Eight challenges for CSCW

5. Designing for infrequently used features
6. The underestimated difficulty of evaluating groupware - Group applications are inevitably more difficult to evaluate.
7. The breakdown of intuitive decision-making
8. Managing acceptance: a new challenge for product developers

Kinds of groupware

- One way we can classify groupware is in terms of the time/space matrix



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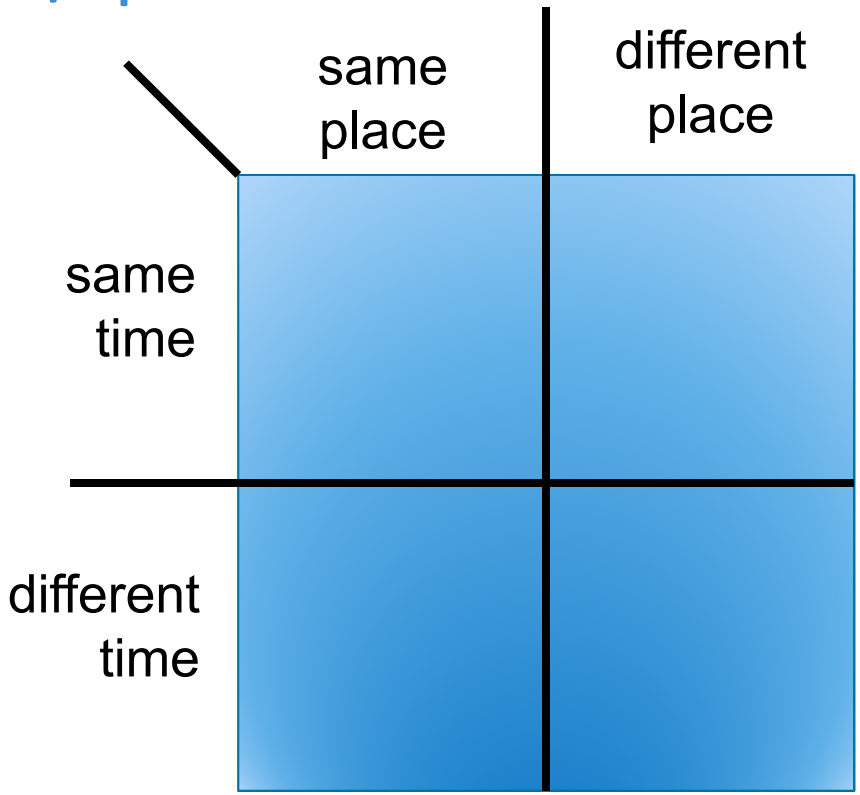

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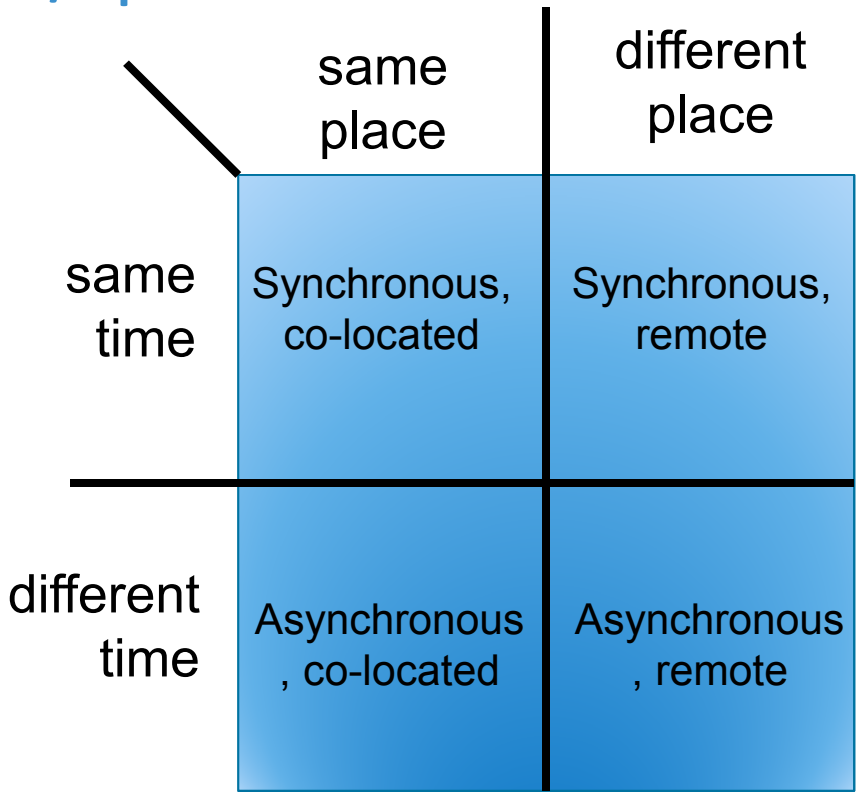

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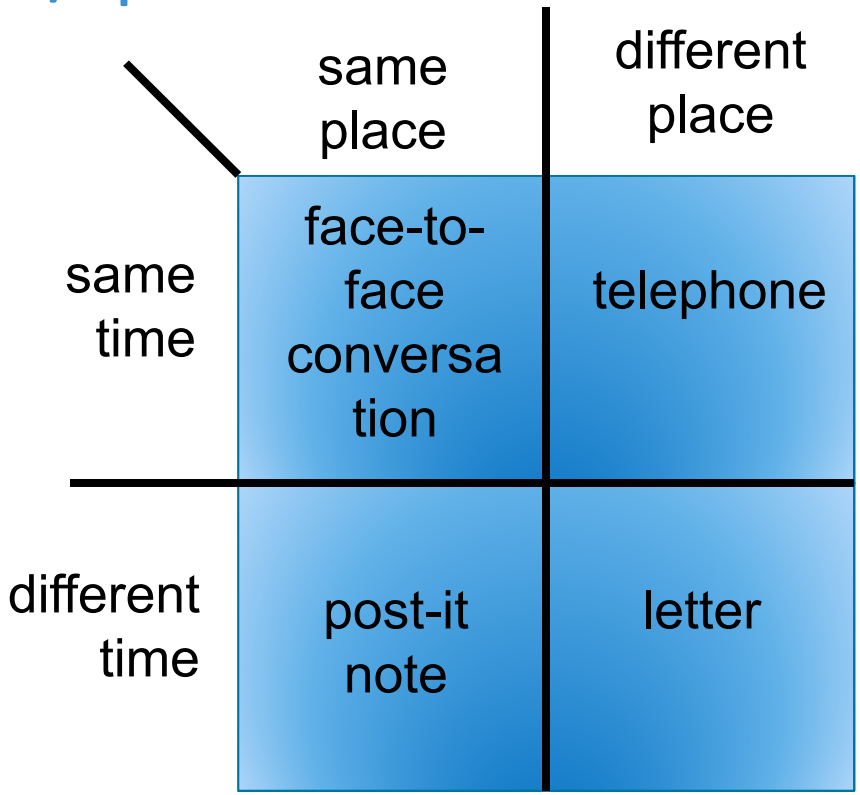

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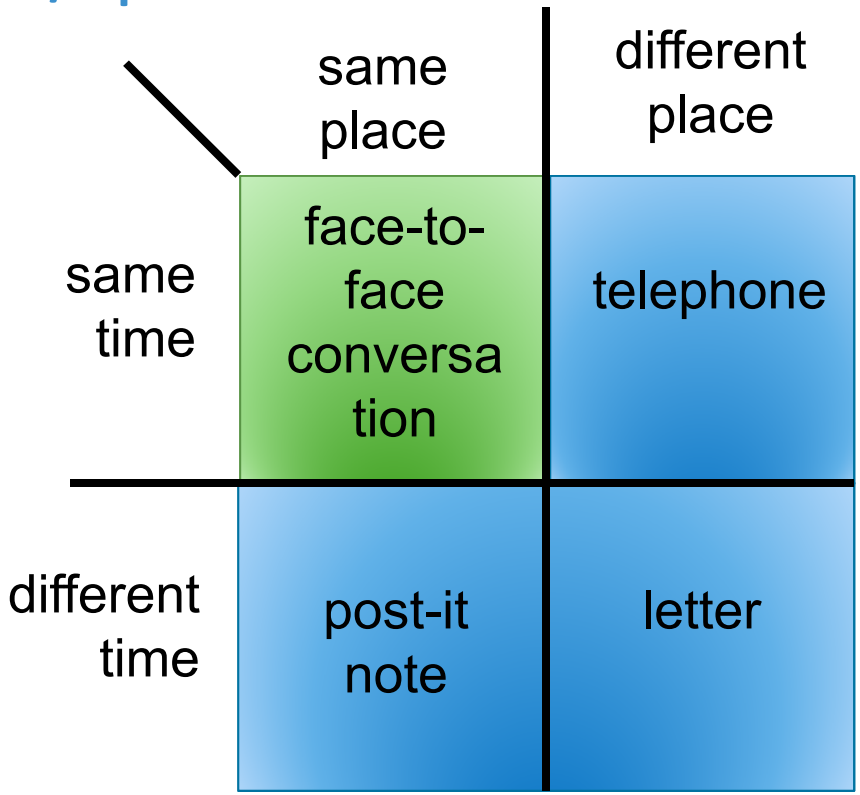

Matchmaker

Kinds of groupware

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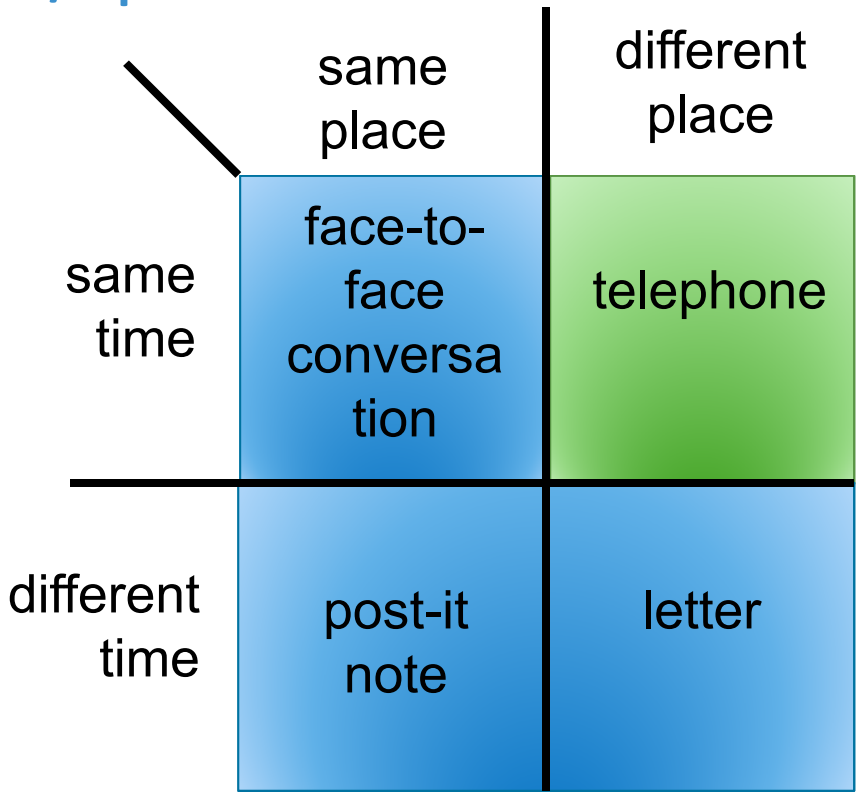

(Source: Dix, Finley, Abowd, Beale, *"Human-Computer Interaction"*)


Cacoo
Sign in
Home
Tour
Pricing
Support
Store
Create diagrams online
Real time collaboration!
Cacoo is a user friendly online drawing tool that allows you to create a variety of diagrams such as site maps, wire frames, UML and network charts. Cacoo can be used free of charge.
SIGN UP! Get a Free Account!
Susan
John

Kinds of groupware

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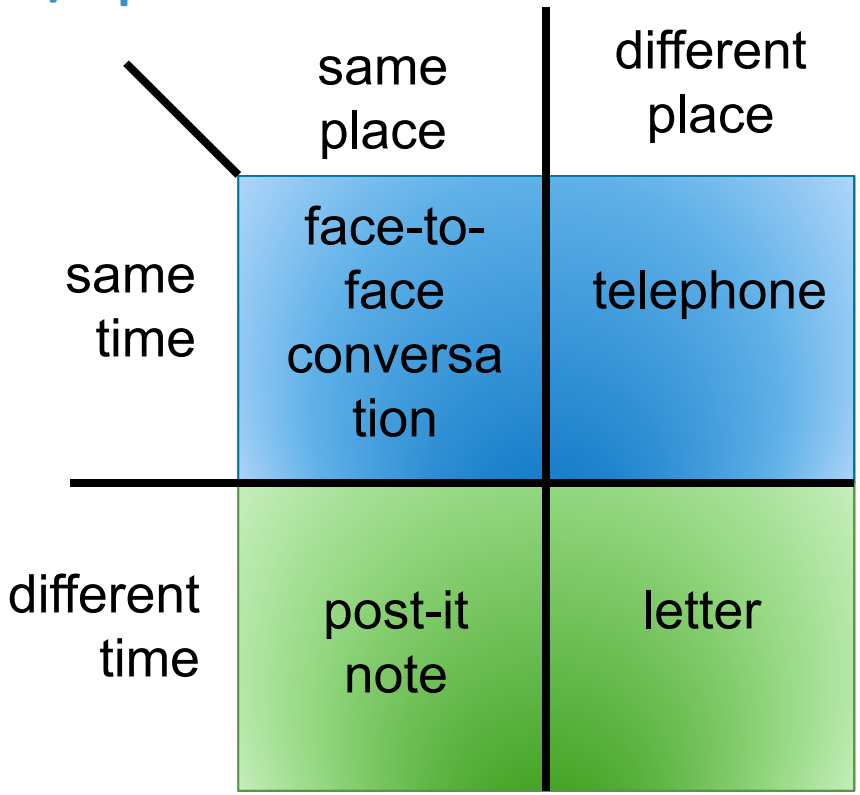


LINC:
An Inkable Digital Family Calendar

Carman Neustaedter [1]
A.J. Bernheim Brush [2]
Saul Greenberg [1]

University of Calgary, Canada [1]
Microsoft Research, USA [2]

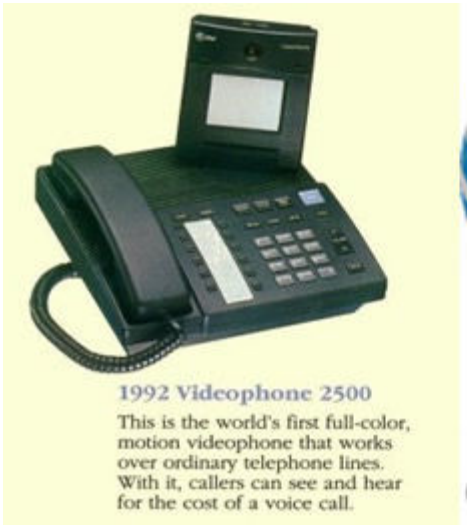
Design Challenges for Groupware

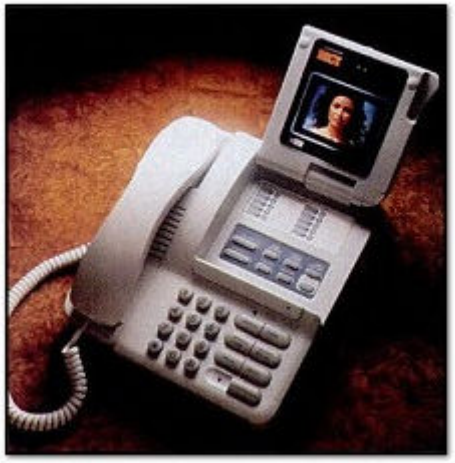
- All the normal usability principles apply

+

- Networking technology & synchronization
- Size of groups: 1,000,000 or 5 people?
- Pace of interaction – rate of conversation
  - System responsiveness becomes more important
- Simultaneous support for different user roles
- “Critical Mass” effect

Adoption: Interoperability
The 1990's Videophone





at&t

MCI®

Source: http://www.usabilityfirst.com


16:34
Samantha
Call in progress
00:34
Sprint
htc


End
End


Skype™ - tkeating
File Account Call Chats View Tools Help
Tom Keating
1 new event
Call cheaply to mobile phones and landlines
Seasonal offers on phones. Visit Store
Rich Tehrani
Add Callers
Do More
Rich Tehrani
This is High Quality video.
For the best video qualit...
Menu
Video started
Call Duration 00:51
Stop My Video
Call with Rich Tehrani 9,234,229 p...

Adoption: Perceived Benefit

- Requires benefit for the group + benefit (or at least no extra work) for individual
- For example: Office Calendar
  - Benefit for group scheduling if everyone keeps it up to date
  - Personal benefit to not doing so because software is difficult to use, prefer paper calendar, ...
- Other examples: Google Wave
- Solutions:
  - Social pressure
  - Ensure (perception of) personal benefit

Abuse: The “Commons” Problem

- Taking inappropriate advantage of anonymity
- Sabotaging group work
- Violating privacy

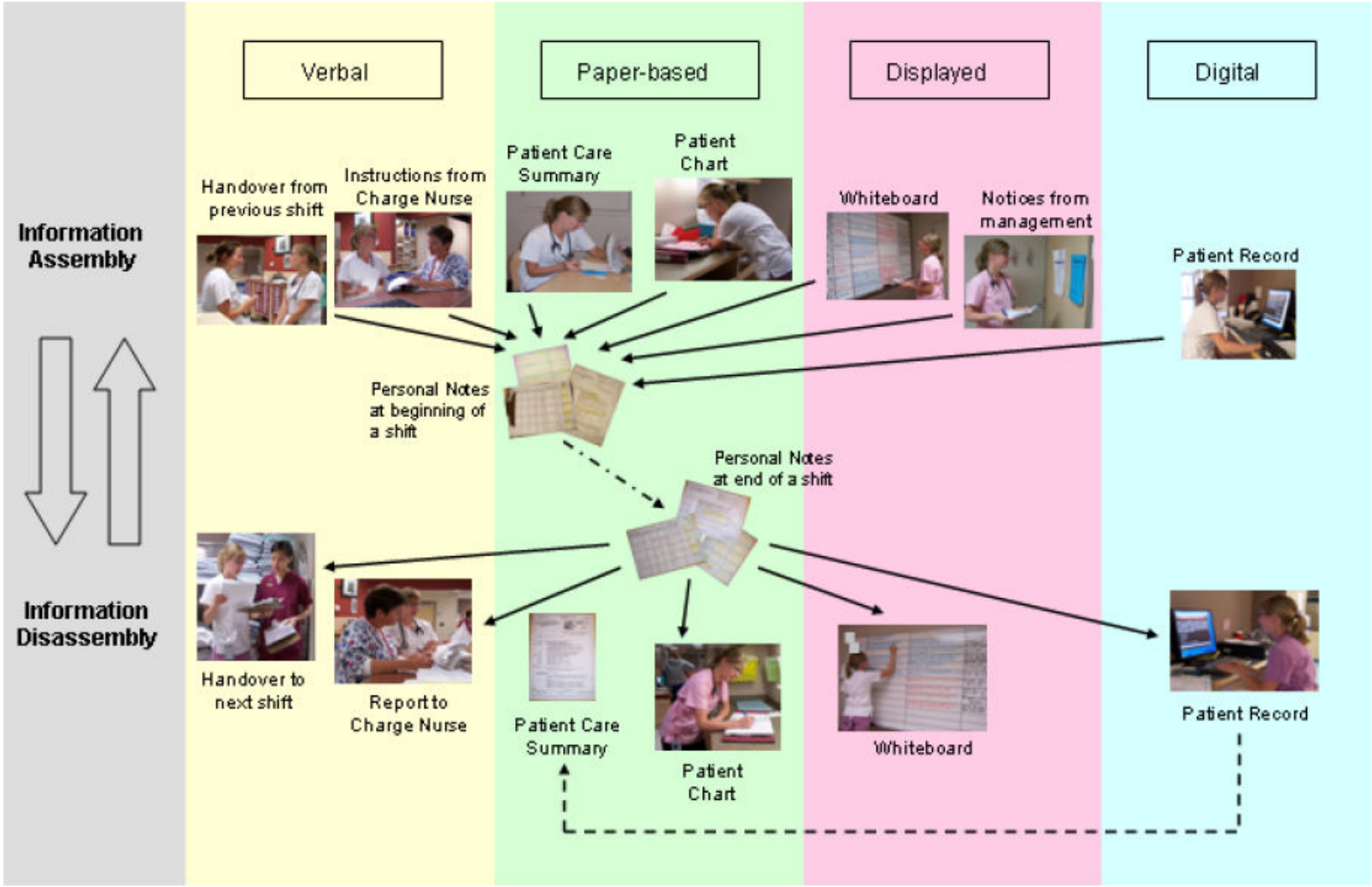
Social vs. Technological Structure

- Communication has structure
  - Technological structure: mediated by computer (fill out form, ask/response order)
    - Predictable and less error-prone; medical/military
  - Socially-mediated structure: free to be initiated and managed by human participants, e.g. email
    - Less obstructive, less dependent on designer correctly predicting patterns of use
    - More errors possible (no protocol)
- Facilitation vs. Enforcement

Customization and Grounding

- Different customizations (e.g. “warning” = red vs. “warning” = blue) can lead to miscommunication
- Different displays for different stakeholders:
  - Facilitate common understanding across expertise and tasks
  - But may introduce imbalances of understanding
- Awareness is important: provide cues as to what is common/shared and what is private

Example: Information Flow over Shift Change



Charlotte Tang and Sheelagh Carpendale. Supporting Nurses' Information Flow by Integrating Paper and Digital Charting. In Proceedings of the European Conference on Computer Supported Cooperative Work (ECSCW), pages 43-62, 2009.

Session Control

- Session control:
  - What spaces are available
  - Who can enter and exit the system
  - When
- Issues of:
  - Facilitation (including side conversations)
  - Privacy
  - Interruption management

Floor Control

- Access to shared artifacts (e.g. shared whiteboard)
  - Simultaneous (generally preferred)
  - Turn-taking
- Management of disruptive individuals
- Hybrid solutions:
  - Shared and private space
    - Recall – tabletop territories
  - Proximal interaction

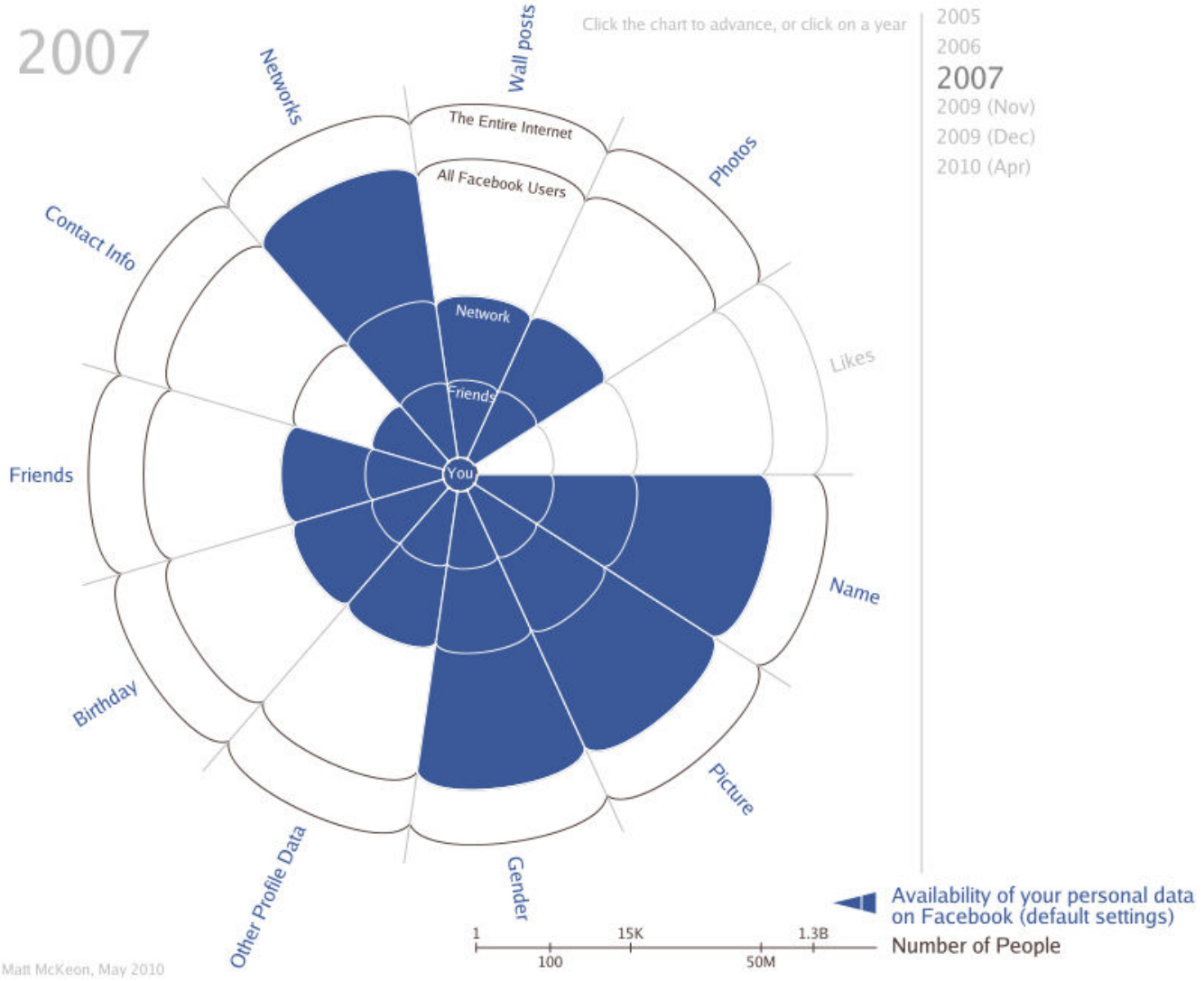
NiCE Discussion Room

- <videos>

Privacy Options

- Privacy & Anonymity
  - Anonymity can be crucial to fair and open discussion
- Sharing, Identification, Accountability
  - More information leads to common ground
  - Useful for customization of interface
  - Accountability, reduction of abuse
- Control and Reciprocity
  - User-selected amount of control of privacy and anonymity
  - Requesting information requires sharing information

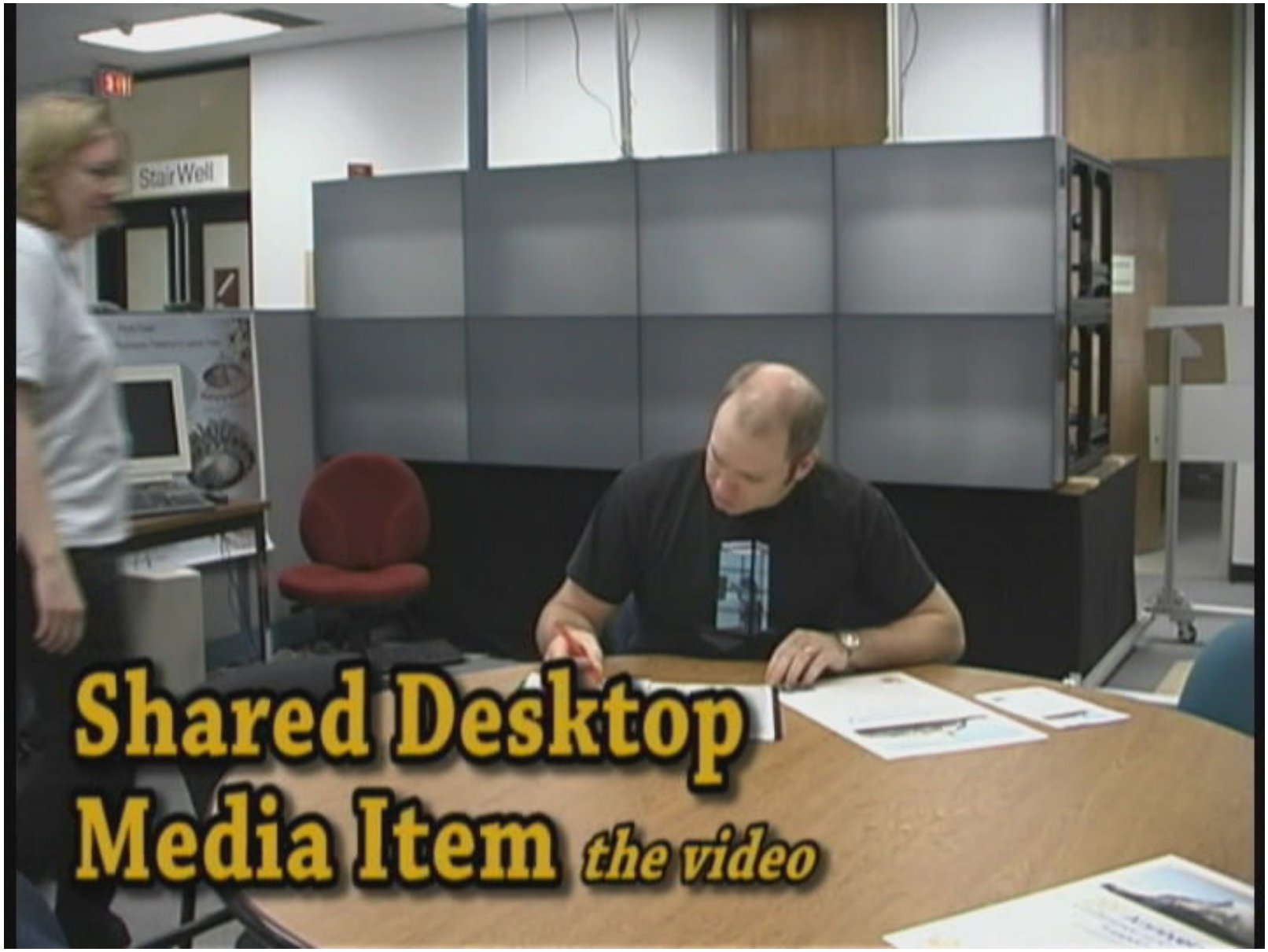
Evolution of Privacy on Facebook



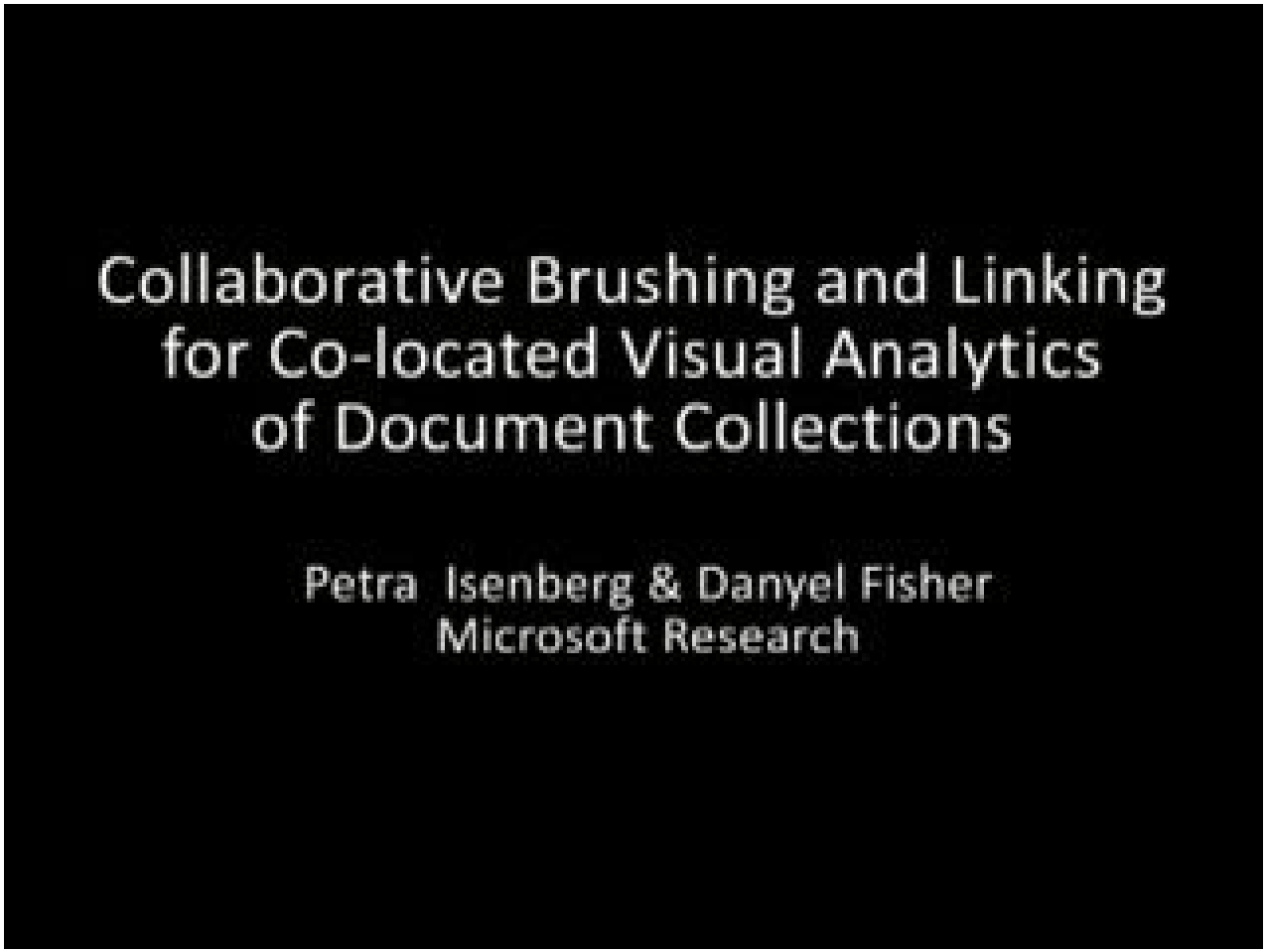
http://mattmckeon.com/facebook-privacy/

Awareness

- Implicit communication is important
  - Gestures (“body language”)
  - Environmental factors (office door open/closed)
  - Common ground (background on participants)
- Balanced with privacy


StairWell
Shared Desktop
Media Item
the video

Cambiera: Interaction Awareness



Where is Cambiera on the space/time matrix?

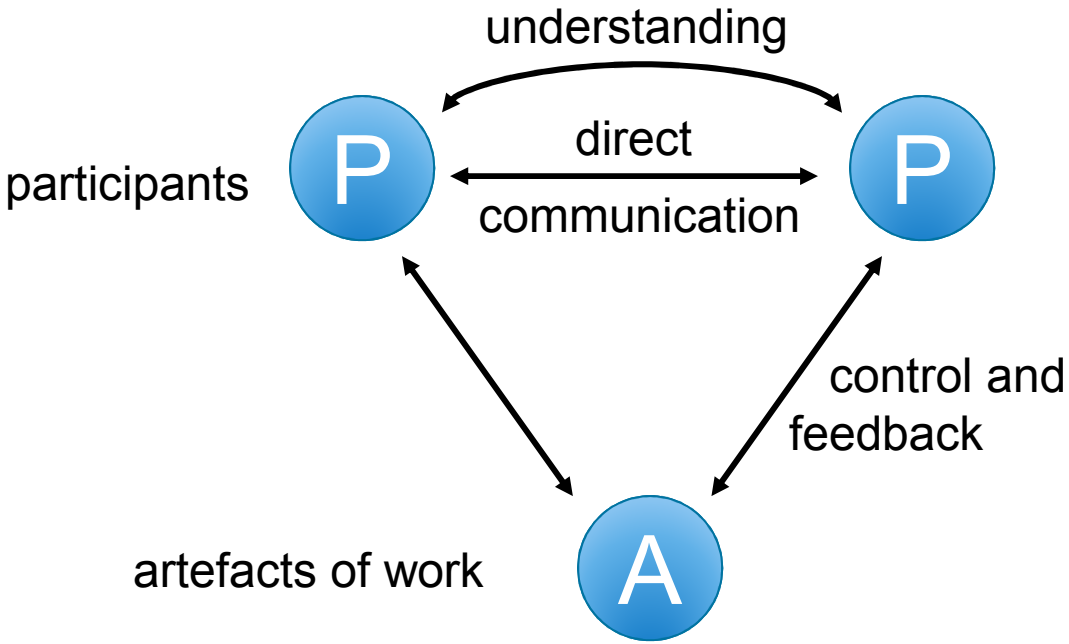
Evaluating Groupware is Difficult

- Organizing and scheduling groups
- Group interaction style is difficult to select for when screening candidate participants
- Pre-established groups have different communication patterns
- New groups will change rapidly during the formation/solidification process
- Asynchronous groupware requires long term studies
- Modifying prototypes is more difficult due to software complexity
- New software and interface changes can be disruptive to an entire organization

Source: http://www.usabilityfirst.com

Kinds of groupware

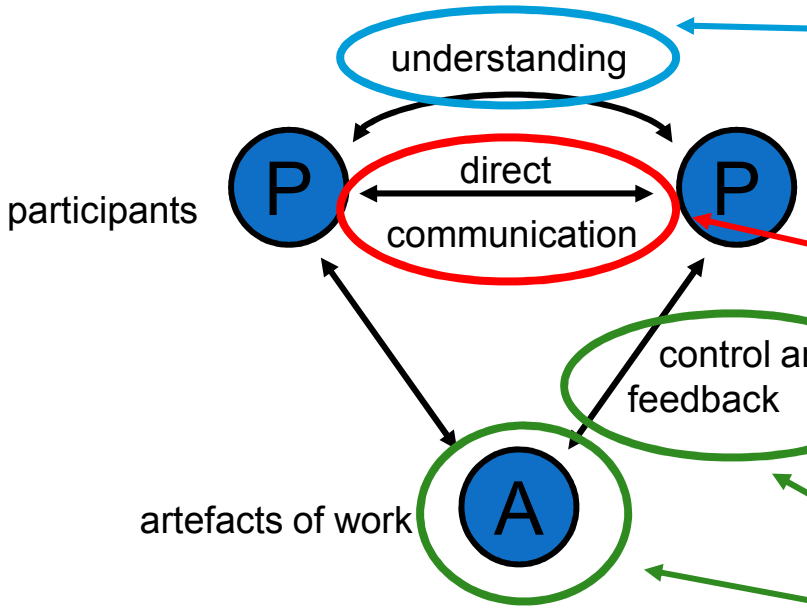
- Another way we can classify groupware is in terms of the system function
- Consider the cooperative work framework



(Source: Dix, Finley, Abowd, Beale, *"Human-Computer Interaction")*

Kinds of groupware

- Using the cooperative work framework we can classify systems by function:



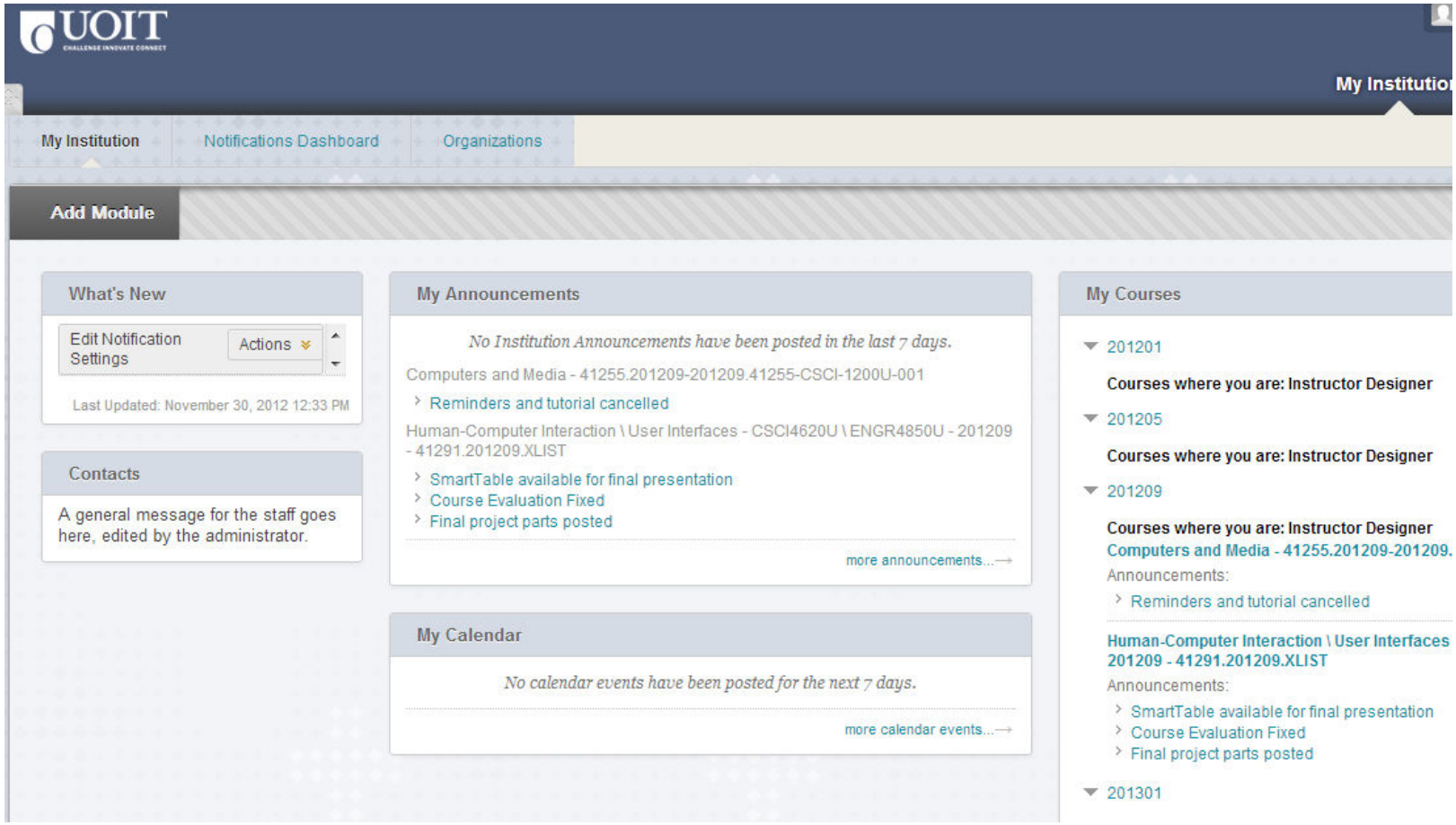
(Source: Dix, Finley, Abowd, Beale, *"Human-Computer Interaction")*

meeting and decision support systems
- common understanding

computer-mediated communication
- direct communication between participants

shared applications and artefacts
- control and feedback with shared work objects

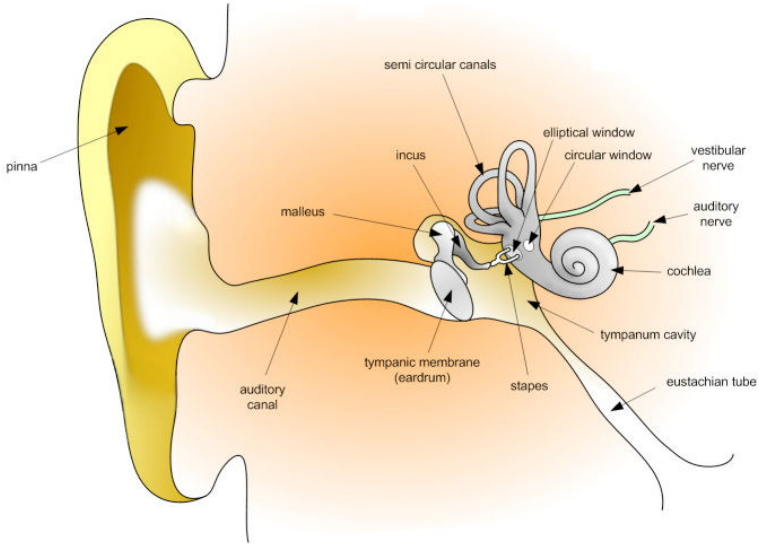
Groupware in the Classroom



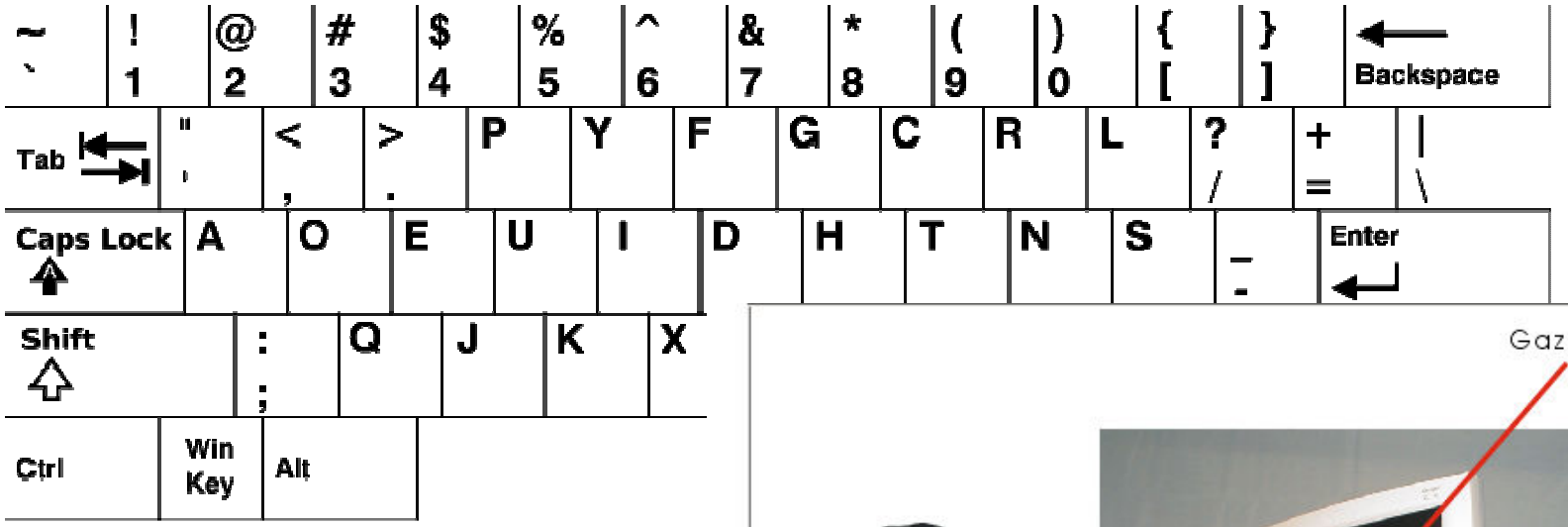
End of Term

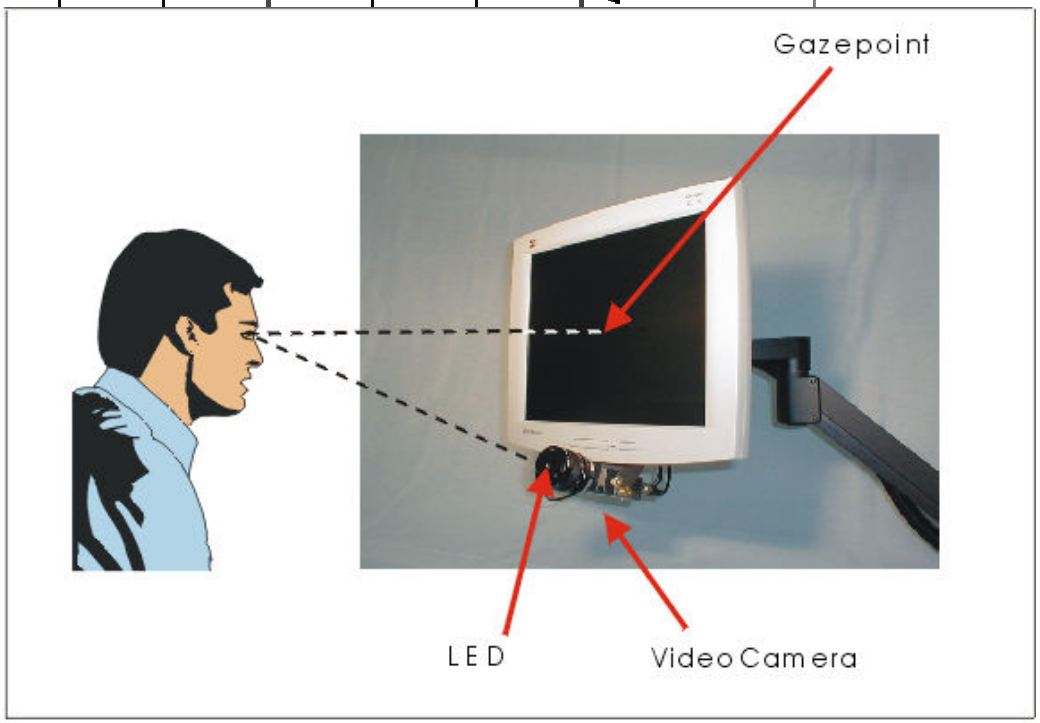
COURSE REVIEW AND SUMMARY

Human Capabilities



Computer Input and Output





Observations

Research Methods

BAD:

Please rate your skill as a Java programmer:

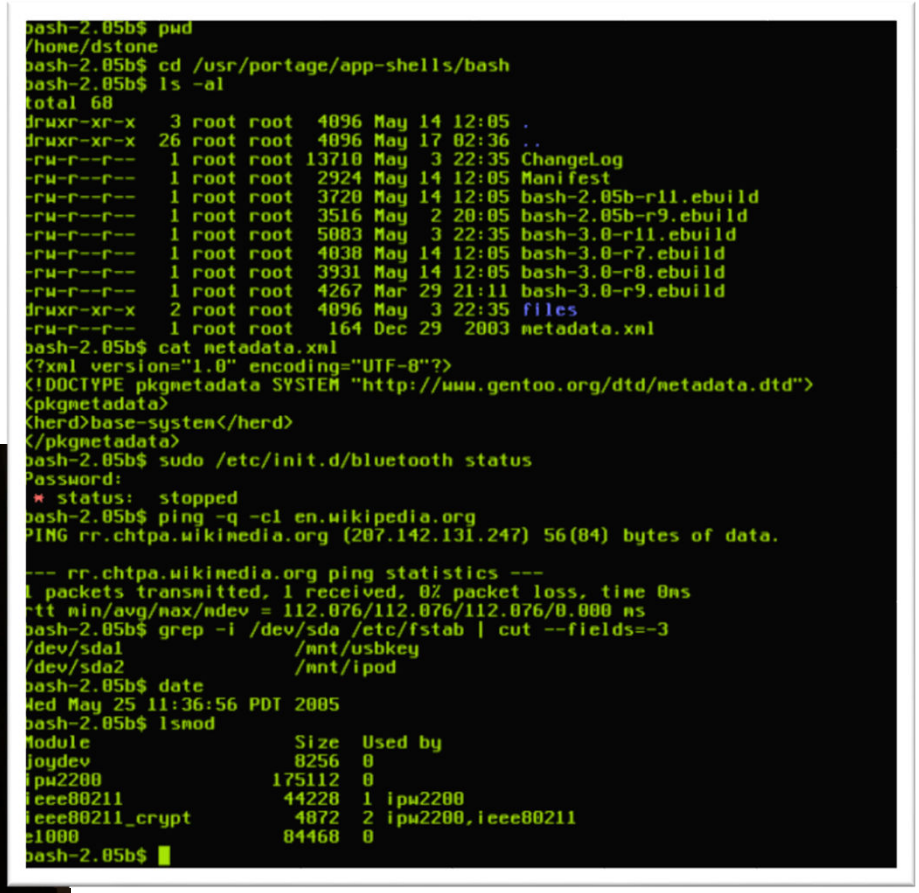
Very Poor	*Poor*	*Average*	*Good*	*Very Good*
1	2	3	4	5

BETTER:

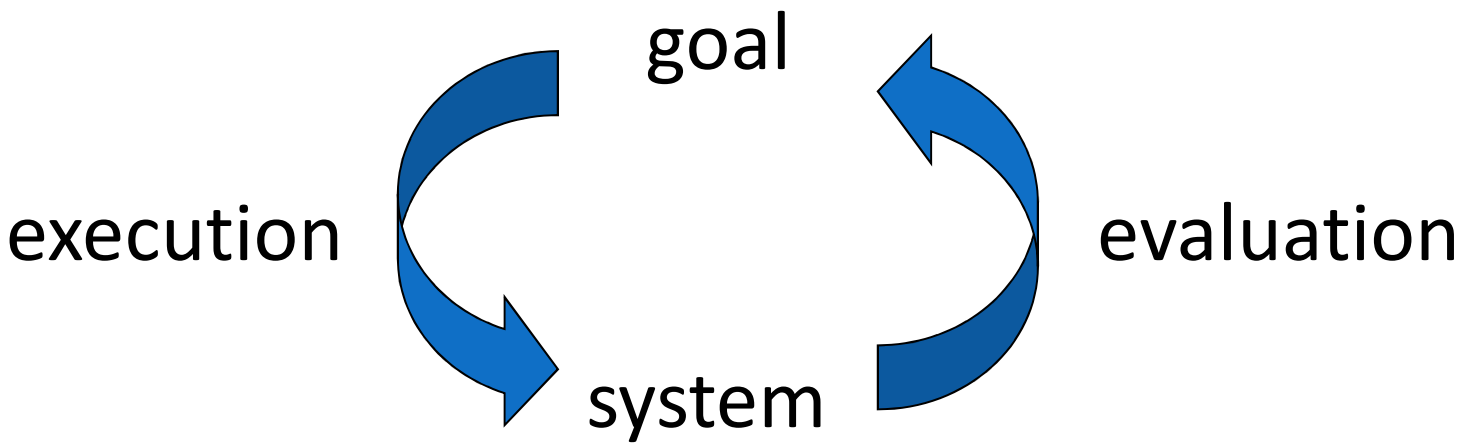
In the list of Java technologies shown below, please indicate which ones you know well and which ones you are unfamiliar with.

	Know very well	*Know*	*Don't know very well*	*Don't know*
JFC/Swing	1	2	3	4
JDBC	1	2	3	4
Enterprise JavaBeans	1	2	3	4

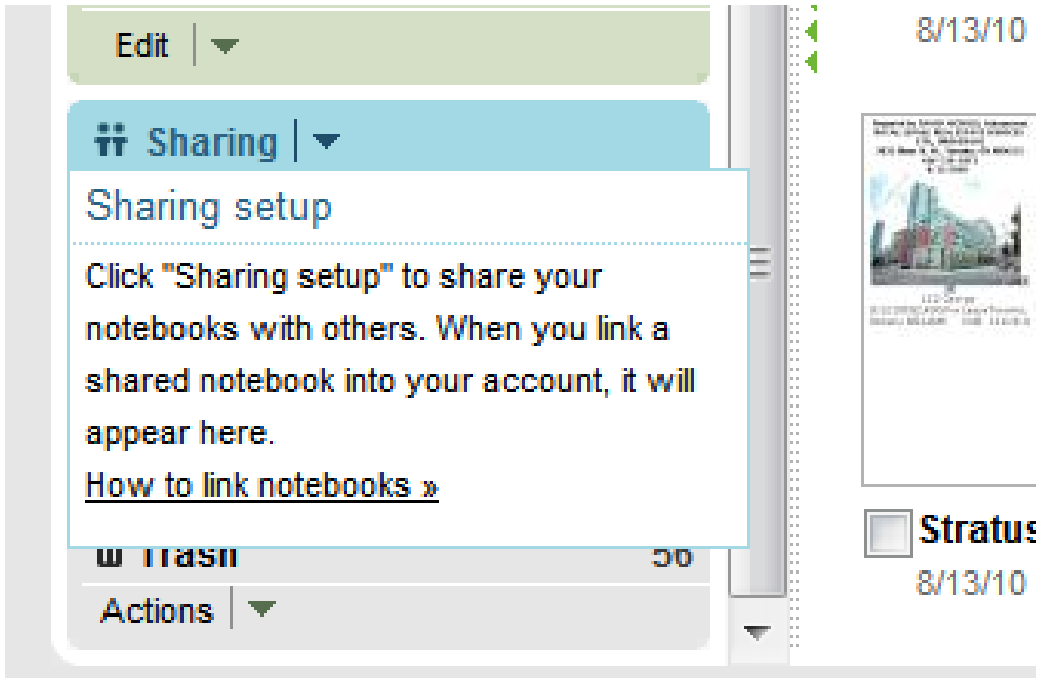
Interaction Styles

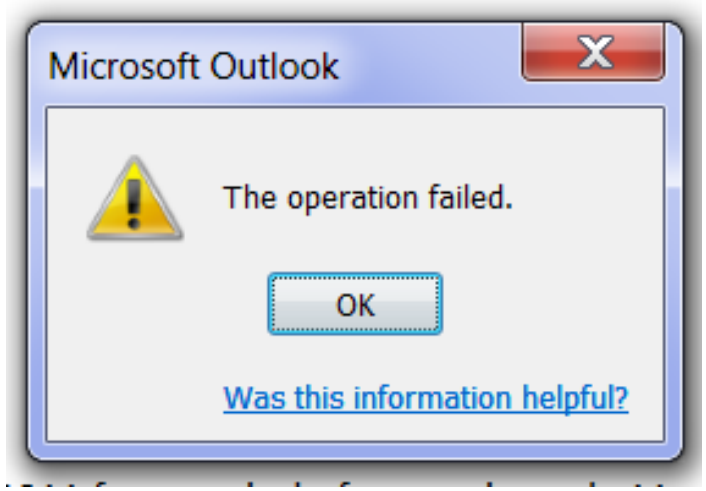


Models of Interaction



Heuristic Evaluation





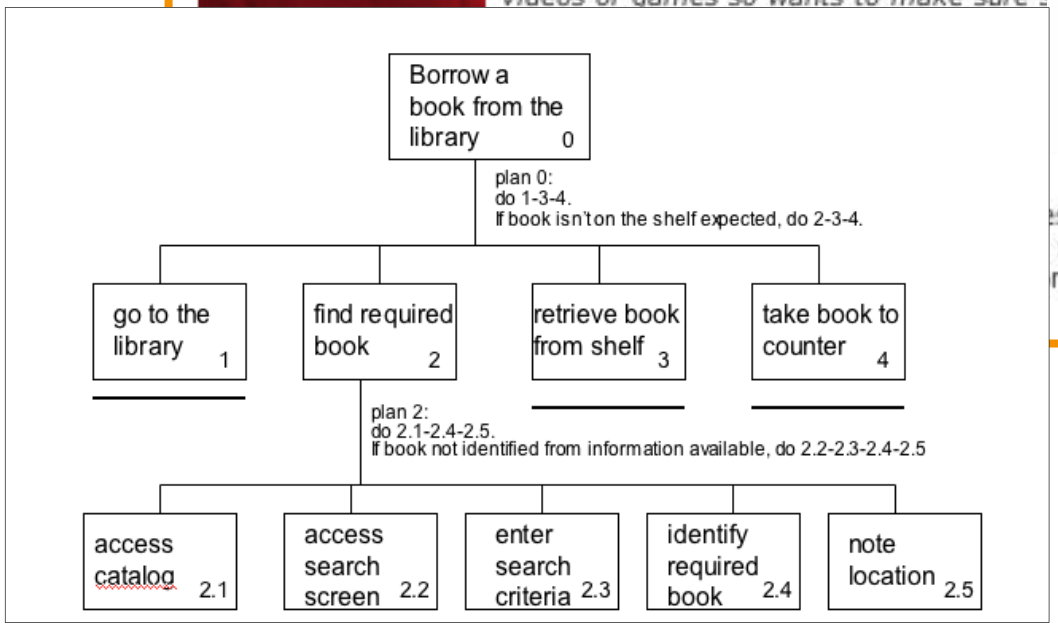
Tasks, Scenarios, Personas

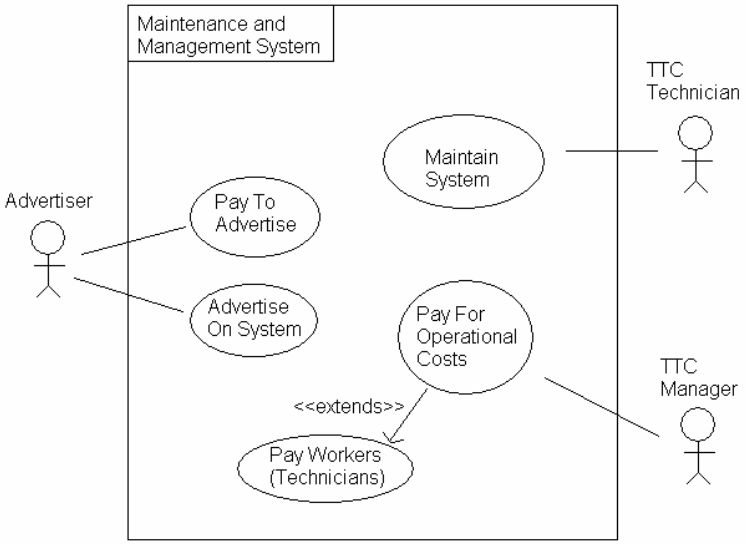
Personas, on the other hand, reveal motivations and potential us
consumer's motivation is what gets them interested in using a pr
example:

Kathleen is 33yrs old and lives in Seattle
home mom with two children: Katie, 7, a
She drives the kids to school (usually car
other kids) in her Volvo wagon. Kathleen
buying the Sony rear-seat entertainment
last weekend at Best Buy to keep the chi
the upcoming trip to see family in Canad

She doesn't want to be distracted by the
videos or games so wants to make sure s

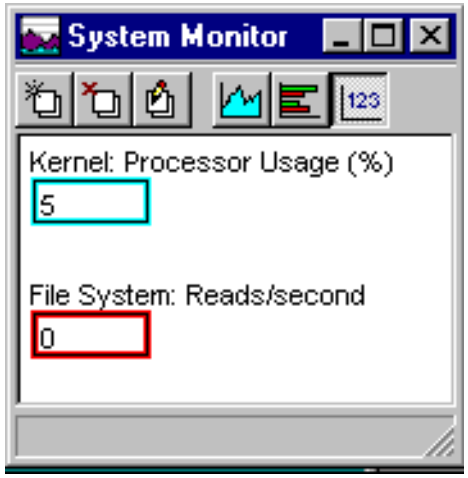
s not necessarily
she likes to talk
me control of the

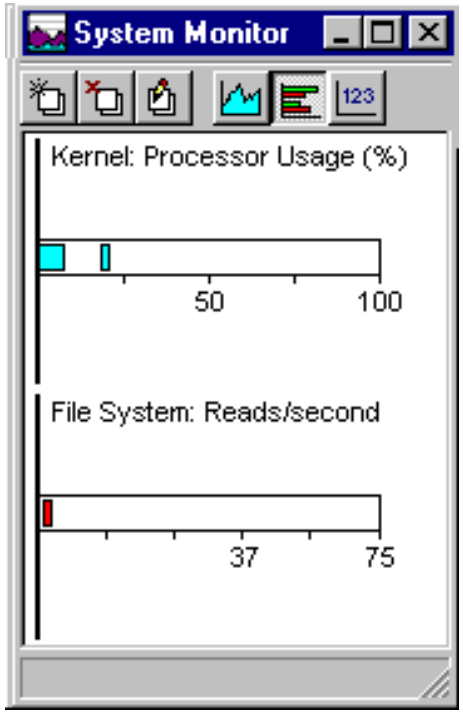


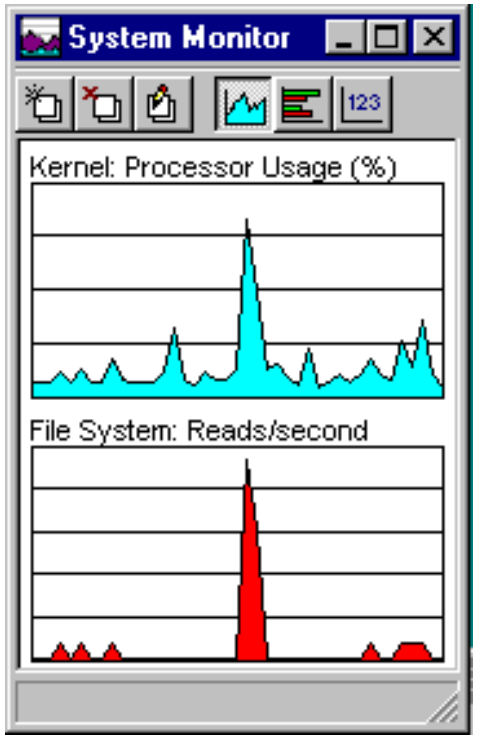


Visual Design and Screen Layout

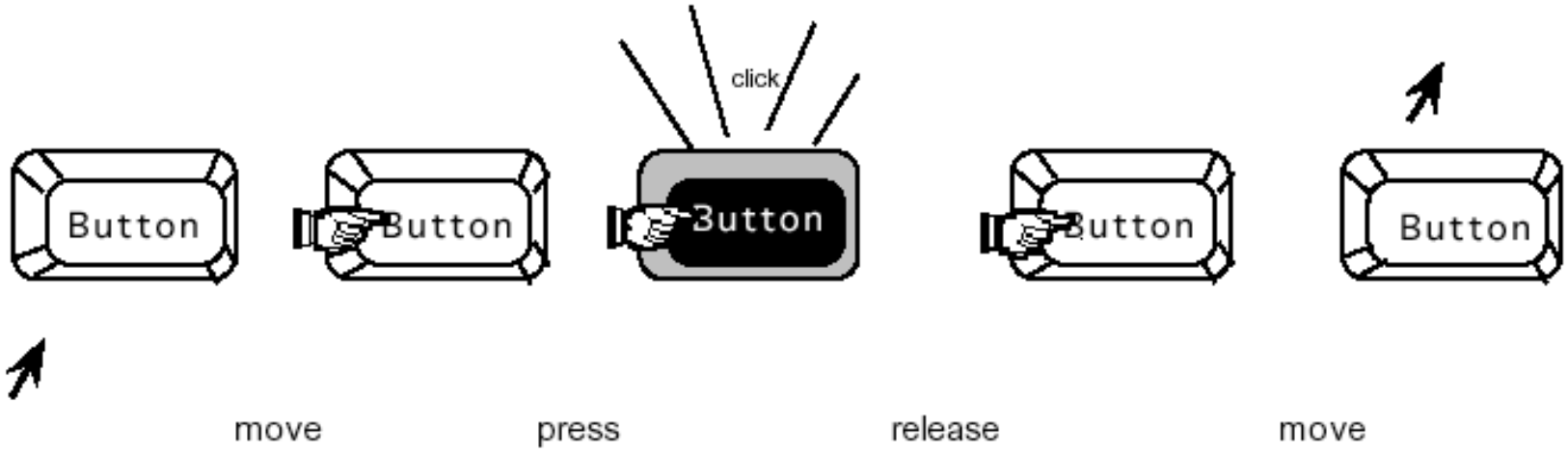
Representations to Support Tasks



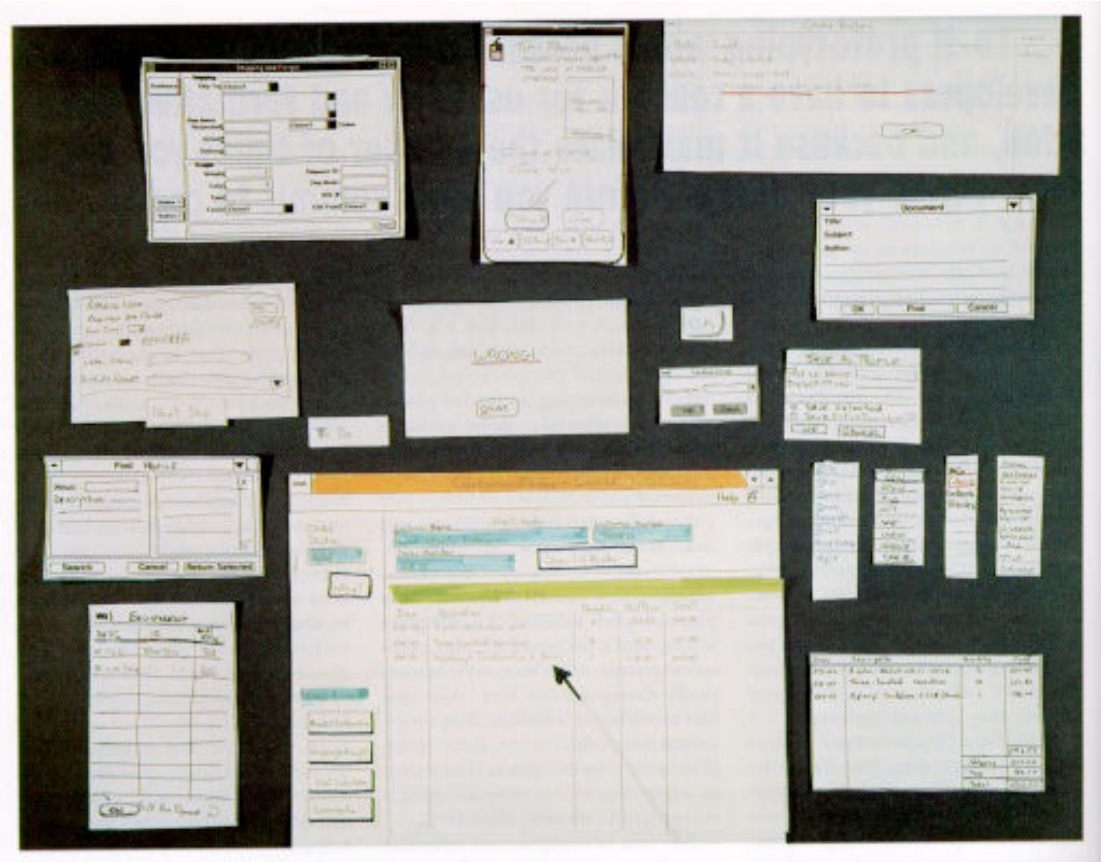


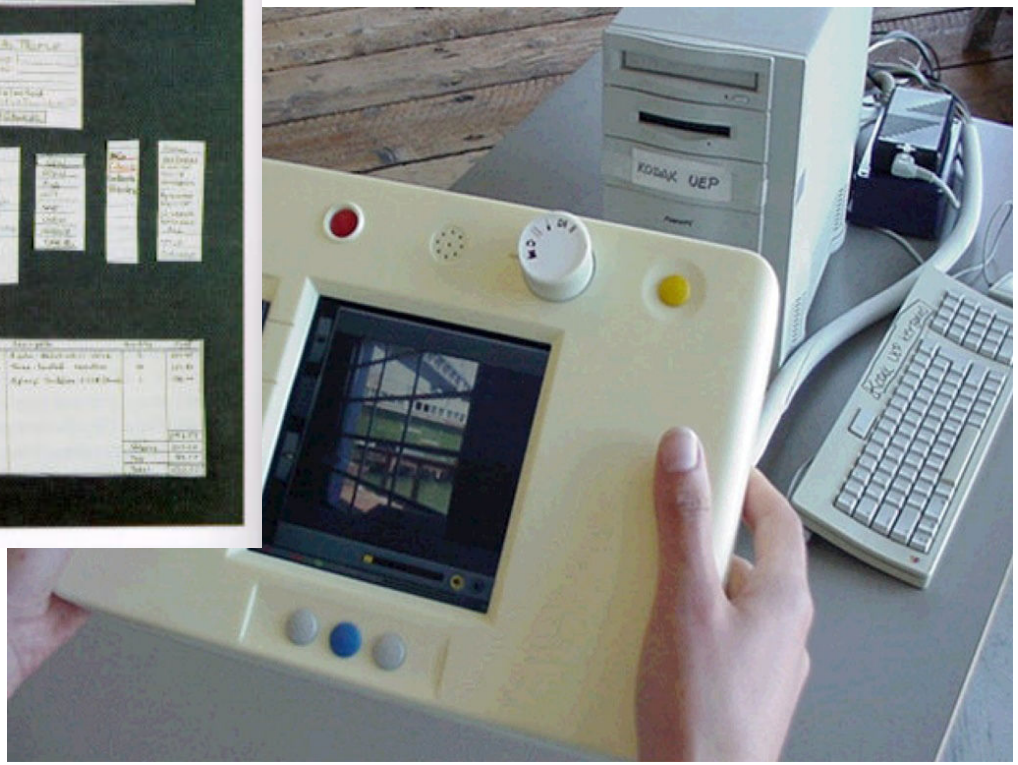


Event Handling and Interface Software

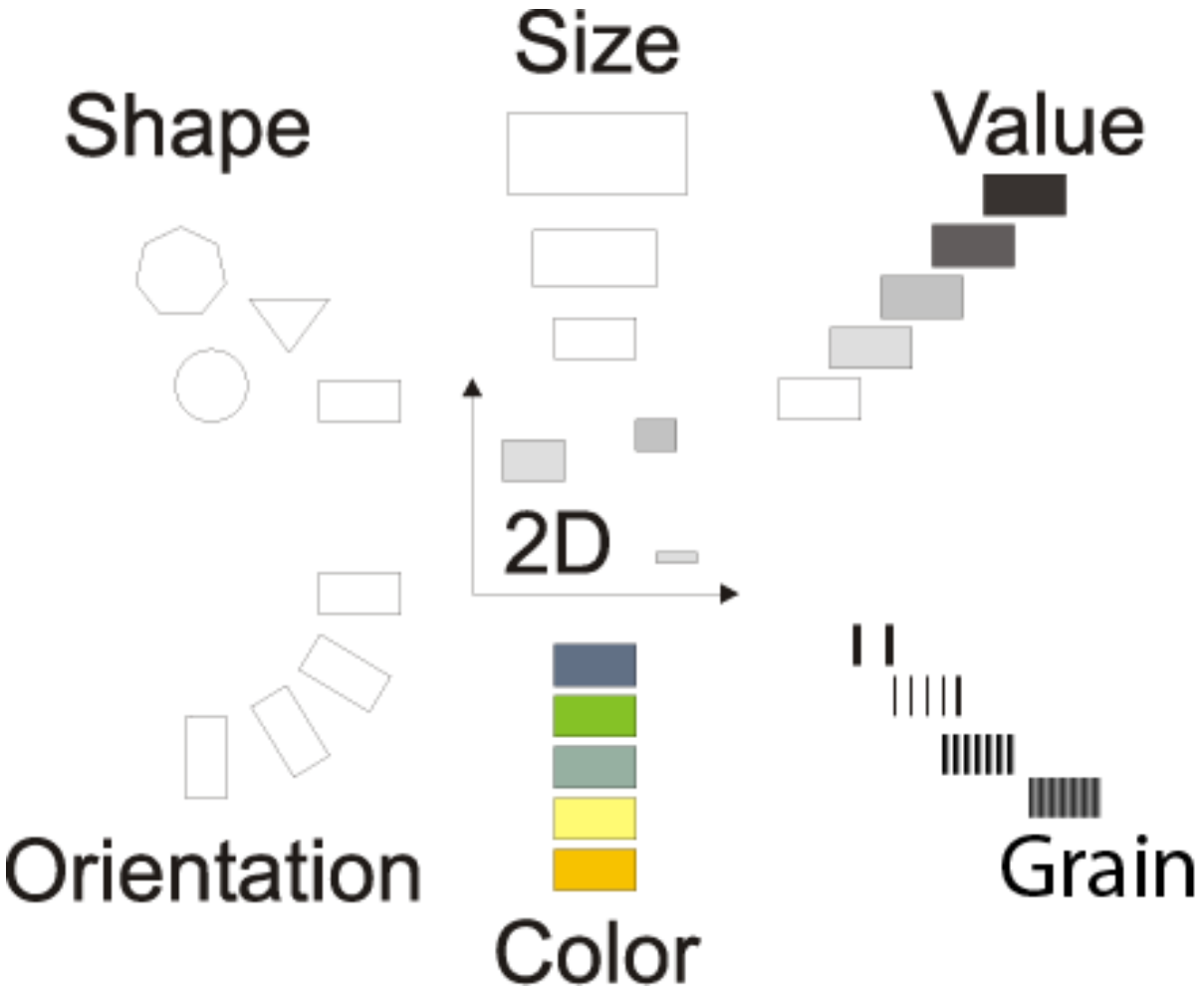


Prototyping





Information Visualization Design



Universal Design

Evaluating Prototypes

- Learnability
- Flexibility
- Robustness

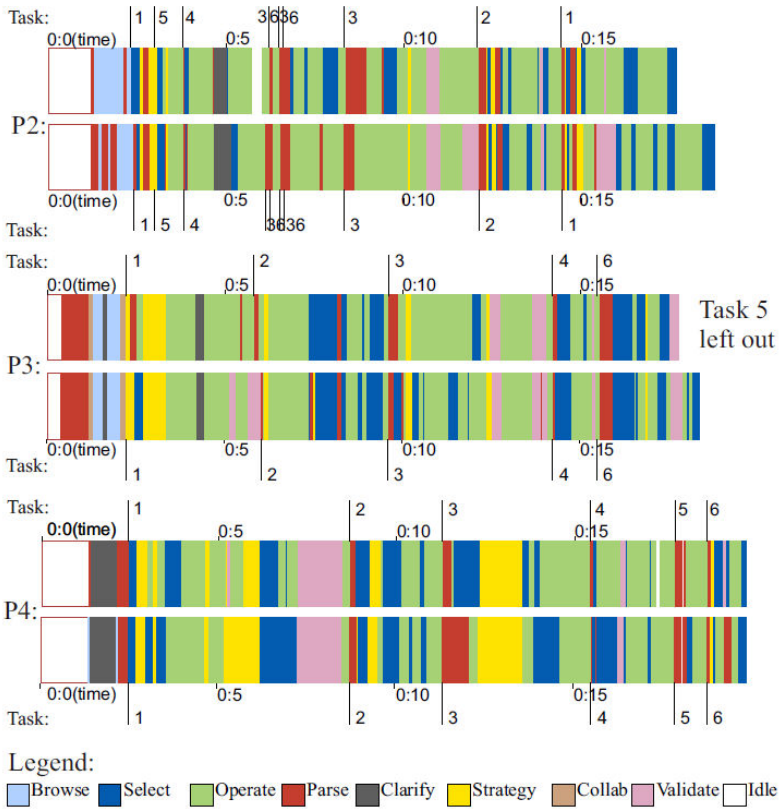
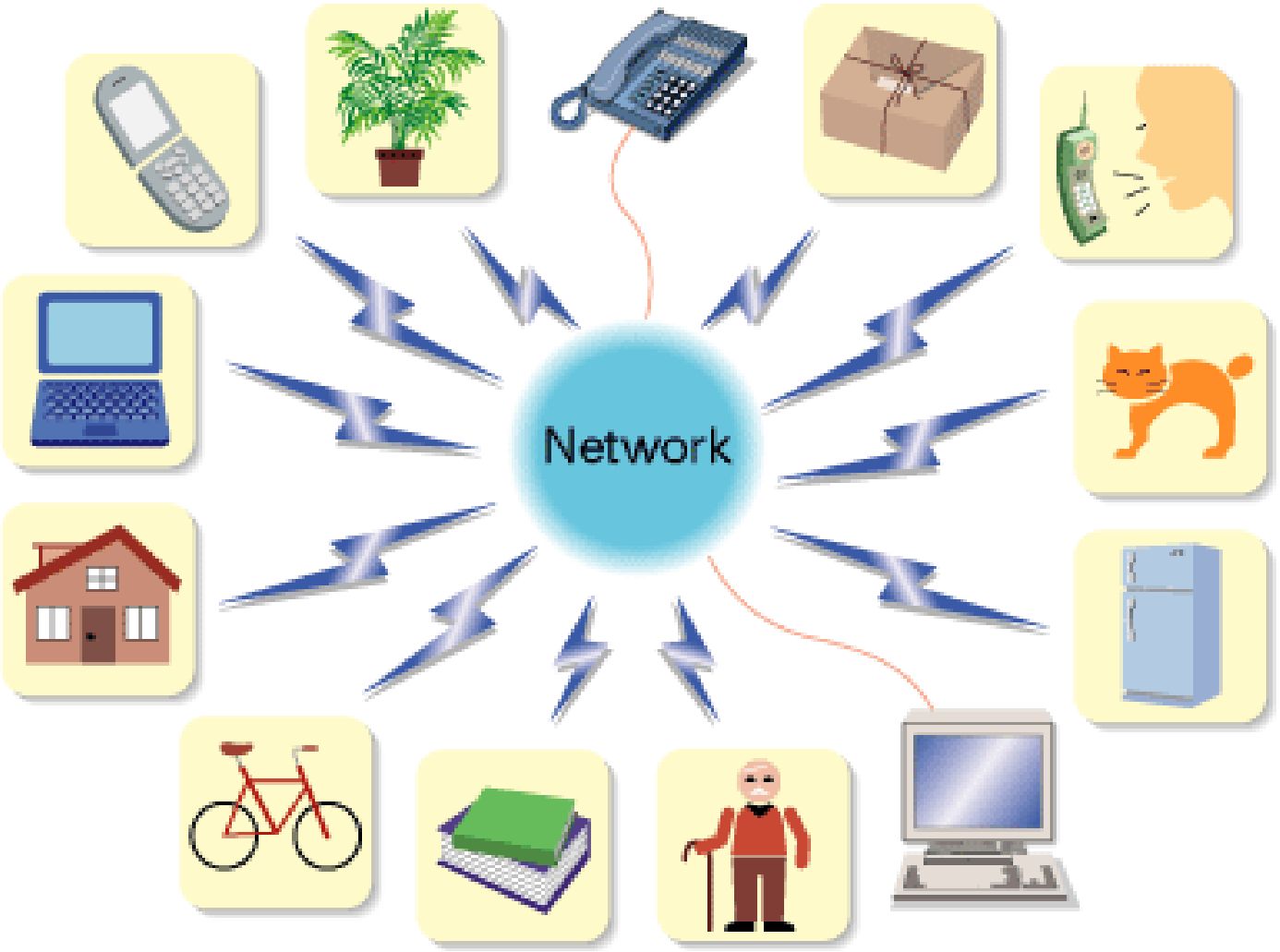


Figure 8. Temporal sequence of processes for three pairs during one complete scenario.

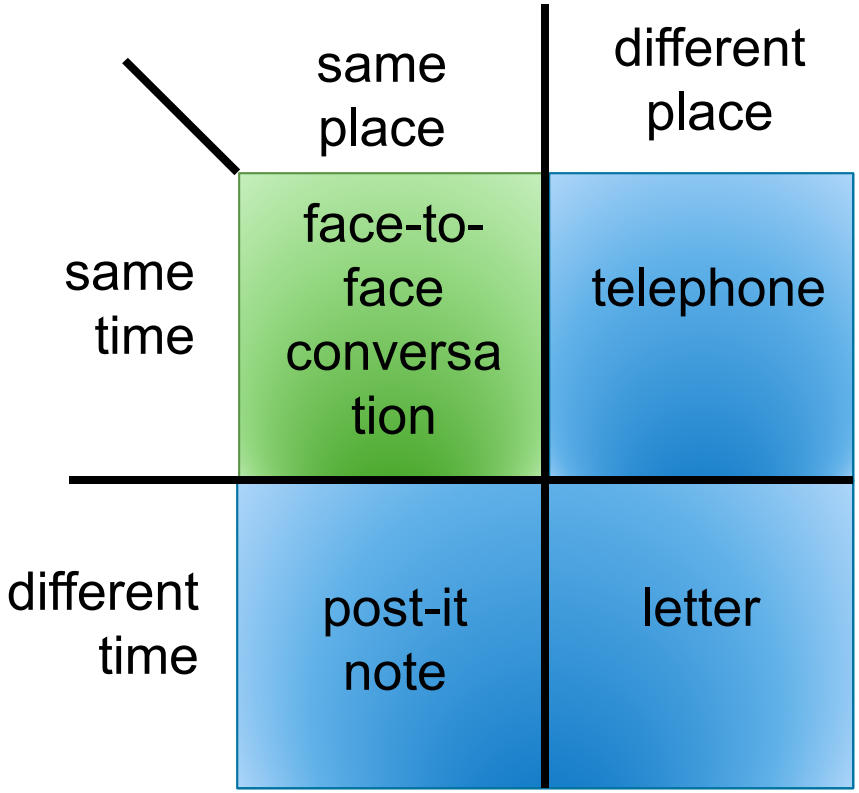
Usability Studies

- Roles
  - Test subject (“user”/ “participant”) (or two)
  - Facilitator
  - Computer (manage digital or paper prototype)
  - Observer(s)
- Running the study
  - Think aloud protocols
  - Cognitive walkthrough
  - Capturing and analyzing data

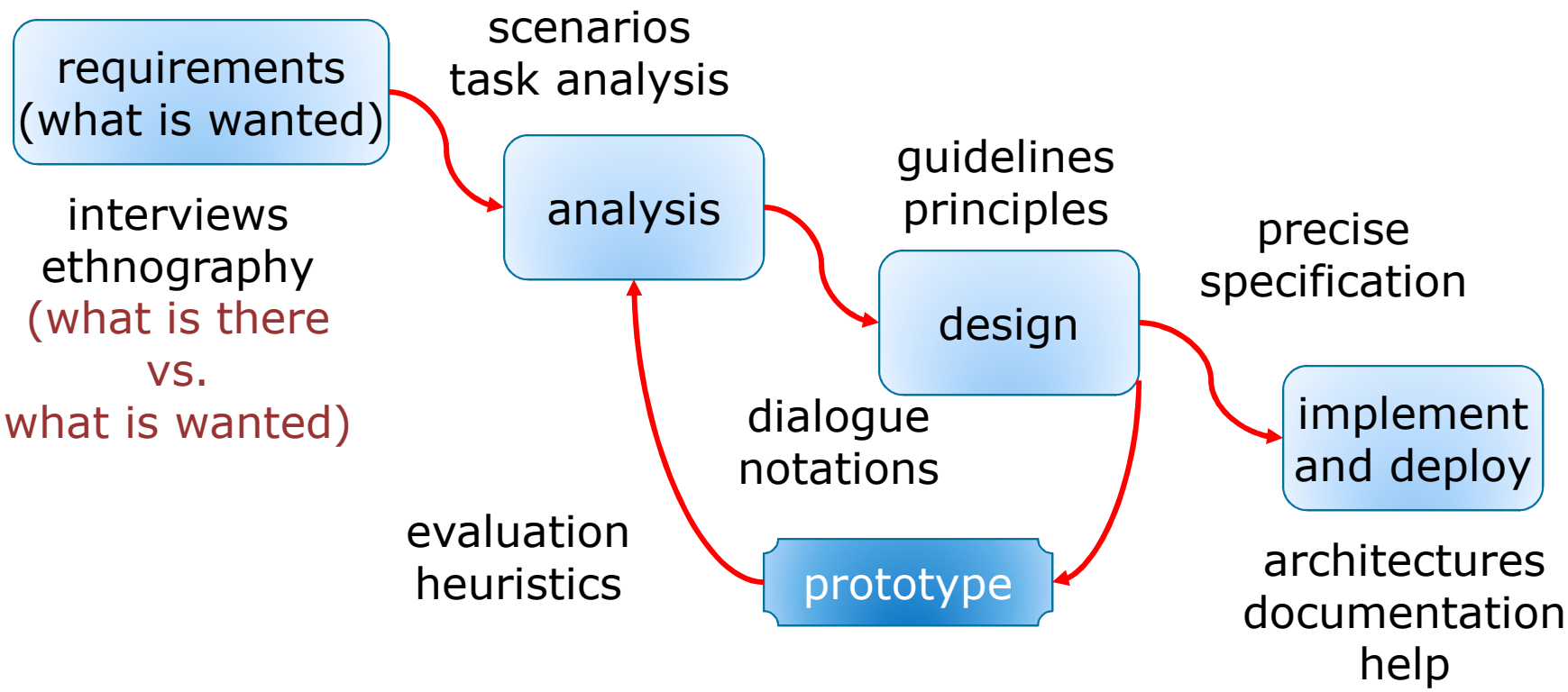
Ubiquitous Computing



Groupware


same place
different place
same time
different time
face-to-face conversation
telephone
post-it note
letter

The Design Process



(Source: Dix, Finley, Abowd, Beale, *"Human-Computer Interaction")*

Final Step: Project Part 4b

- Design a usability study of your prototypes
- Report on your findings and changes you would make if you were continuing with the project

Summary

- Today we introduced:
  - Groupware
  - Course overview

Thanks for
a great term!

Ongoing Course Evaluation

- Please provide your feedback on today's lecture using the daily feedback form on Blackboard