

## **Group Work And Technology**

### **Collaboration and designing interfaces**

- Groupware and CSCW
- Categories of interaction

James Tam

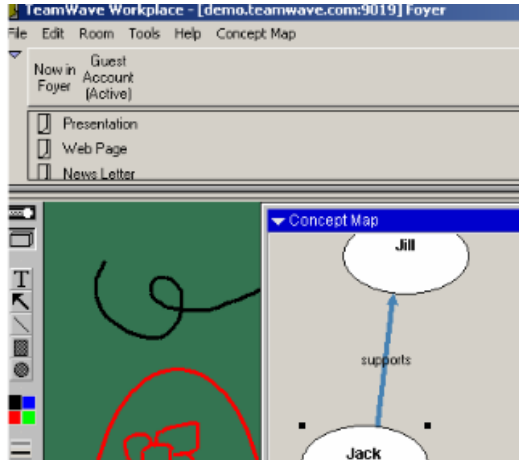
## **Designing Software And Technology To Support Group Processes**

- Groupware
- CSCW
- Categories of Interaction

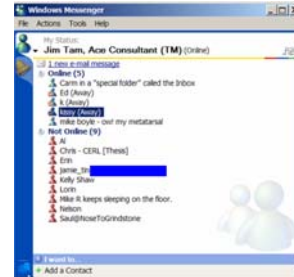
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# Groupware

- Software that supports group processes



The TeamWave Workplace © Sonexis Inc.

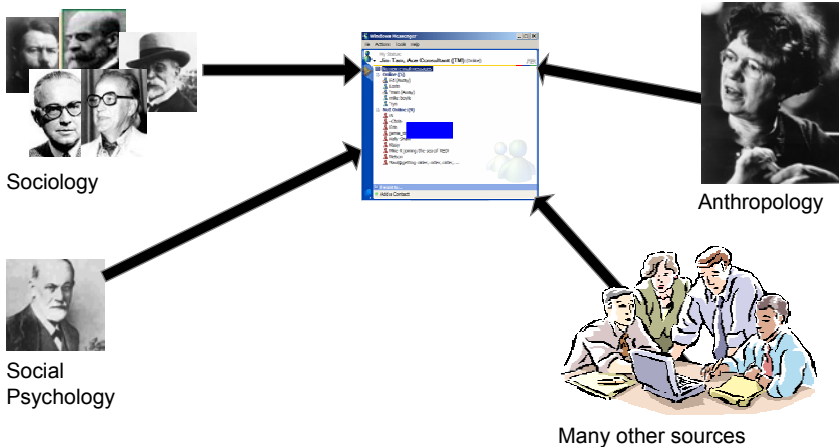


Instant messenger © Microsoft

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# Computer-Supported Cooperative Work (CSCW)

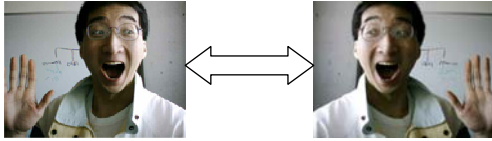
- The theoretical principles for designing and evaluating groupware
- Examine how groups work and how technology can be used to facilitate this work



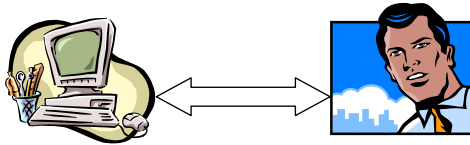
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## Focus Of Groupware And CSCW

**CSCW and Groupware: facilitating human-human interaction**



**...in contrast to HCI which is about facilitating human-computer interaction**



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## Categories Of Interactions: Real World

	Same time	Different times
Same place	Traditional classroom setting	Refrigerator magnets, sticky notes
Different place	Telephone	Traditional mail system

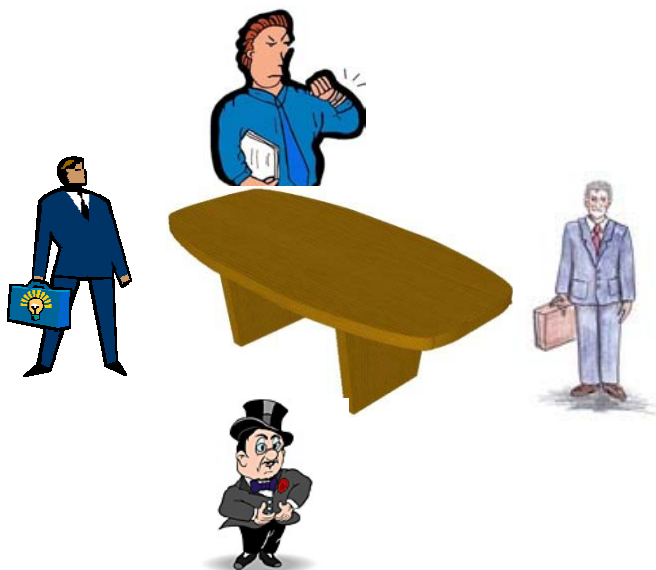
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## Categories Of Interactions: Computer World<sup>1</sup>

	Same time	Different times
Same place	Wall displays, Video games (non-networked)	Group calendars
Different place	Instant messaging Online communities Video/Audio conferencing	Email, Newsgroups, Blogs

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## Same Place, Same Time

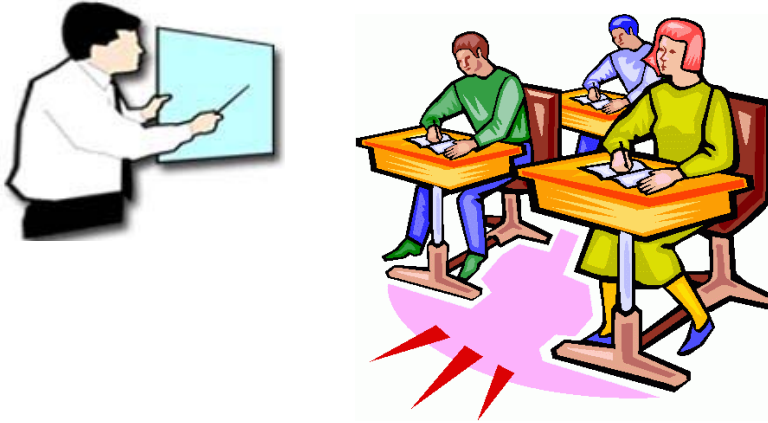


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## Same Place, Same Time: Examples

### **Shared display with a single presenter**

- e.g., presentation tools: PowerPoint

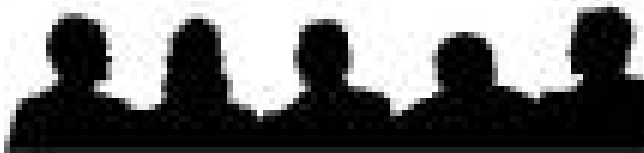
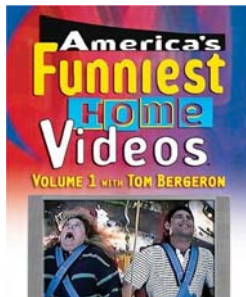


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## Same Time, Same Place: Examples (2)

### **Audience response units**

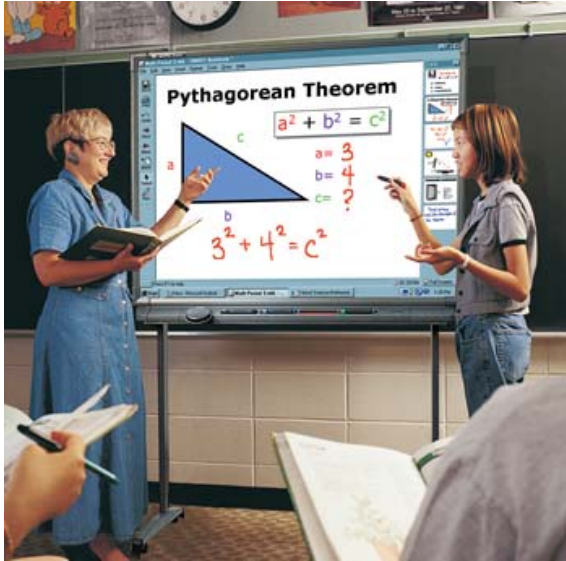
- e.g., Votes in government forums, talk and game shows



America's Funniest Home Videos: [www.abc.com](http://www.abc.com)

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## Same Place, Same Time: Examples (5)



[www.smarttech.com](http://www.smarttech.com)

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## Same Place, Same Time: Examples (6)

- **Electronic meeting rooms**
- **Technology can be used in business meetings for:**
  - Brain storming
  - Voting on and ranking issues.



[www.groupsystems.com](http://www.groupsystems.com)

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## Same Place, Same Time: Benefits

### (Nunamaker et al. 1991):

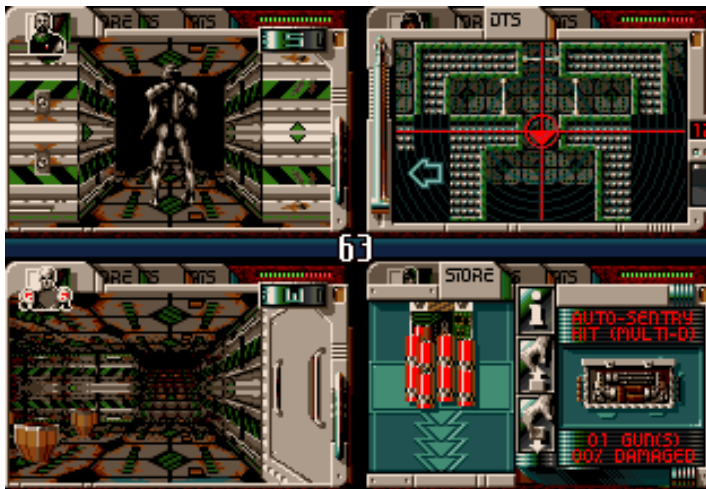
- Parallel communication can occur
- Anonymity of contributions
- The contributions of participants produce a permanent record of what occurred.
- The process structure provided by the approach helps focus the group on key issues and discourages digressions and unproductive behaviors.

Nunamaker, J.F., Dennis, A. R., Valacich, J.S., Douglas R. and George, J.F. *Electronic Meeting Systems to Support Group Work*. Communications of the ACM, 34(7) (July 1991), pp. 40 – 61.

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## Same Place, Same Time: One Approach

### Single display groupware: separate up the space



Hired Guns © 1993 Psygnosis (Sony)

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## Same Place, Same Time: One Approach (2)

### Single display groupware



Multiple collaborators

Multiple input devices

One display device

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## Same Place, Same Time: One Approach (3)

**Single display groupware: Having all collaborators working in the same space may result in issues that don't appear with a single user system.**

- e.g., menu selection

Traditional opaque menu



Translucent menu



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## Different Place, Same Time



California (9 AM MST)



Amsterdam (9 AM  
MST)

Toronto (9 AM MST)



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## Different Place, Same Time: An Example



Ultima Online © Origin/EA

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## Different Place, Same Time: An Example (2)



World of Warcraft © Blizzard

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## Different Place, Same Time: An Example (3)



IMVU © IMVU www.imvu.com

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## Different Place, Same Time: An Example (4)



Microsoft Virtual Worlds: Fred Hutchinson cancer research center: <http://www.fhcr.org/>

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## Different Place, Same Time: Issues

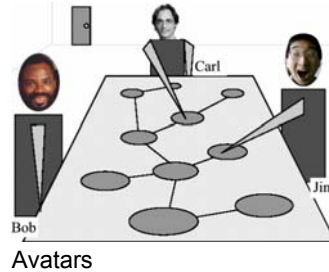
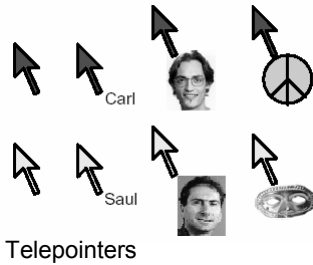
**Some the challenges involve awareness of the environment and other people**

- Who is around?
- What are they doing?
- Where are they?

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## Different Place, Same Time: Resolving Some Of The Issues

### Who is around?



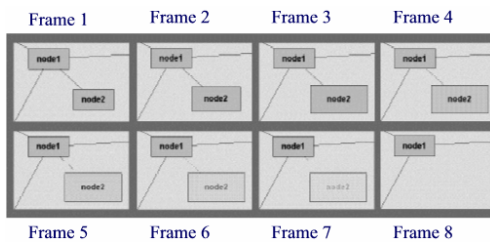
Images from Gutwin (1997) *Workspace Awareness in Real-Time Distributed Groupware*. Ph.D. Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada. December.

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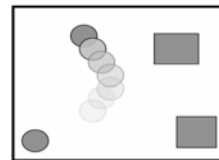
## Different Place, Same Time: : Resolving Some Of The Issues (2)

### • What are they doing?

- In the virtual computer work, small quick actions may be easily missed.
- Typical groupware support:
  - Provide information about intermediate states rather than just the end result.
  - Exaggerate the representation of physical events.



“Supernova” effect for a deletion



Leaving a trail for a movement

Images from Gutwin (1997) *Workspace Awareness in Real-Time Distributed Groupware*. Ph.D. Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada. December.

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## Different Place, Same Time: Location Awareness

- **Where is everyone?**
  - This issue was easily handled with the traditional WYSIWIS systems – everyone has to be in the same location.



Everyone is here!

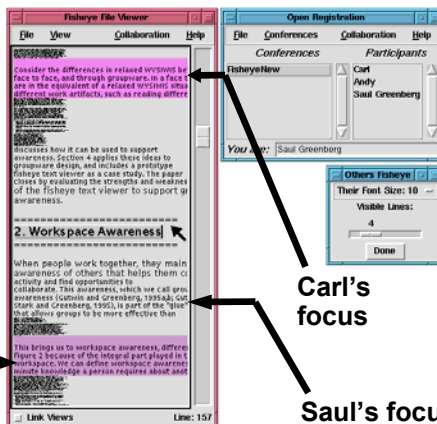
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## Different Place, Same Time: Location Awareness (2)

- **Where is everyone?**
  - This is more of a challenge when participant's view of the workspace can differ (e.g., they can be in different locations).

Fisheye  
Text  
groupware

Mark's  
focus

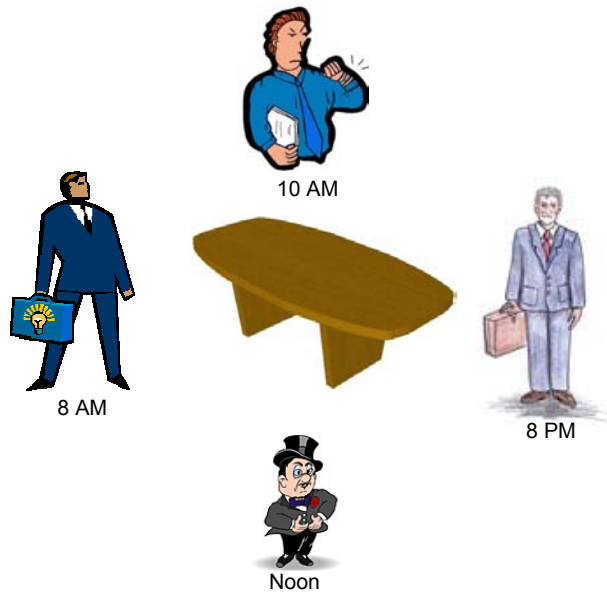


Carl's  
focus

Saul's focus (local user)

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## Same Place, Different Time



## Same Place, Different Time (2)

### **Some issues:**

- The accumulation of information over time may result in the need for some sort of structure i.e., simply accumulating information about everything is typically not a solution.

### Same Place, Different Time (3)

A group of people are working together on a project



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### Same Place, Different Time (4)

While one person is away, the others continue working



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**Same Place, Different Time (5)**

**The absent person comes back**



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**Same Place, Different Time (6)**

**Now he's left trying to figure out what's different**



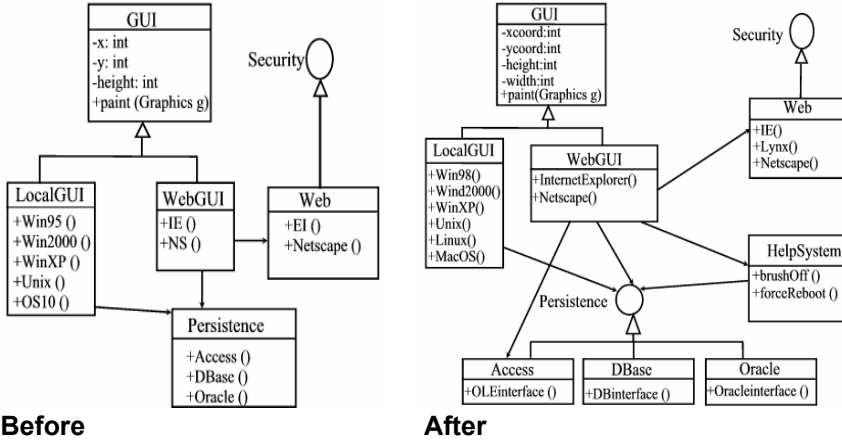
Wav file from the Simpson © Fox

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## Same Place, Different Time (7)

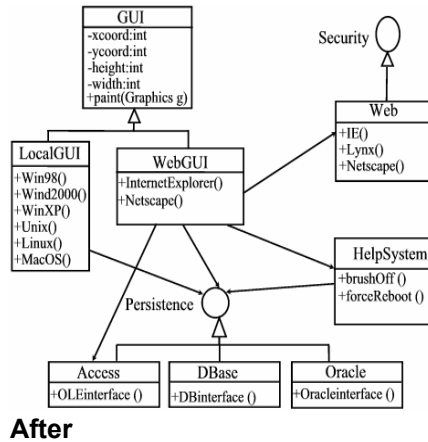
**Keeping Up With Changes Is Hard!**



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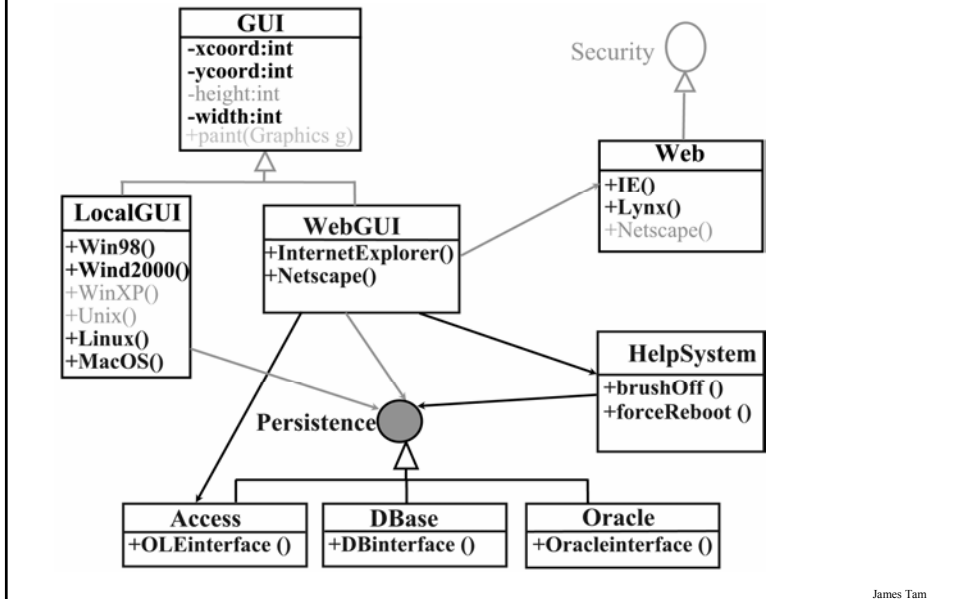
## Same Place, Different Time (8)

**Keeping Up With Changes Is Hard!**



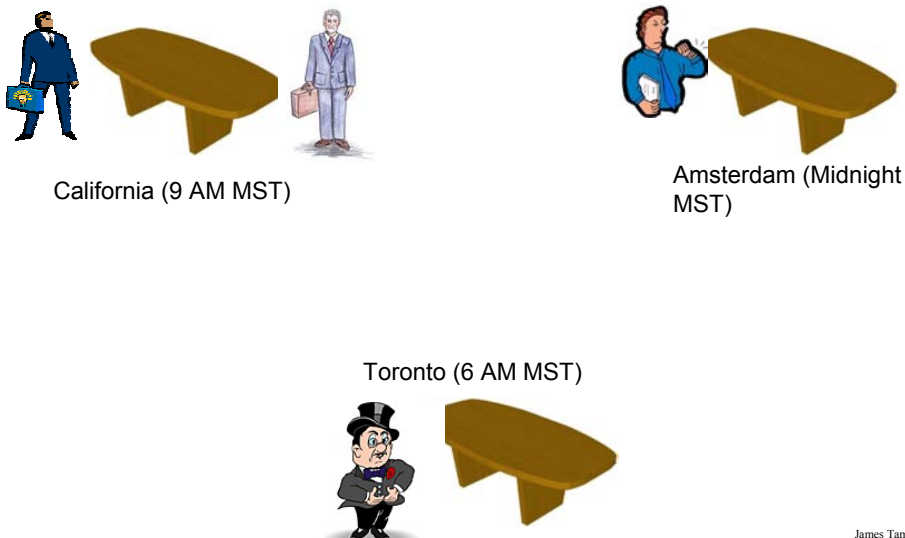
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## Same Place, Different Time (9)



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## Different Place, Different Time



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## **Different Place, Different Time (2)**

- **The challenges of tracking changes may be even more daunting (i.e., face-to-face communication may not be an option in this case).**
- **Options vary from sparse forms of communication (e.g., email) to online communities.**

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## **Different Time, Different Place (3)**

- **Newsgroups**
- **Listservers**
- **Discussion boards**
- **Blogs**
- **Wikis**
- **Online communities**

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## **Different Time, Different Place (4)**

### **Some issues**

- How to represent and organize information
- How to prevent information overload

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## **You Should Now Know**

- What is groupware
- What is CSCW
- How are groupware and CSCW related
- What are the categories of interaction
- What are some of the issues for each category
- How were some of those issues face by groupware

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