

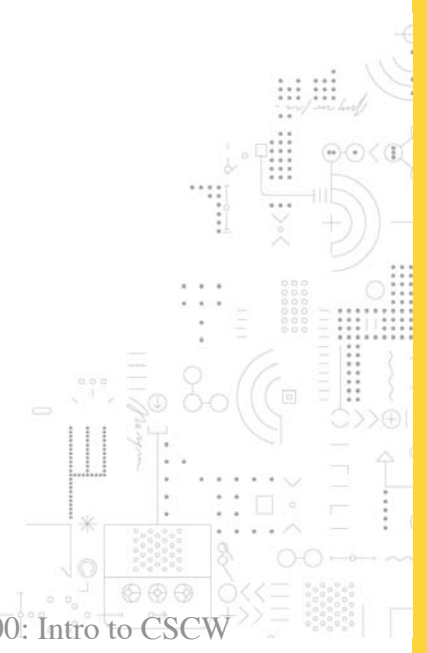


Introduction to CSCW and Groupware

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Outline

- Two articles on CSCW
- What is CSCW and groupware and their relation to CSCL
- Historical development
- Basic problems addressed
- Research areas and concepts
- Components of groupware





Two seminal articles on CSCW

- Ellis, C. A., Gibbs, S. J. and Rein, G. L. (1991). Groupware: Some Issues and Experiences, 1991. *Communications of the ACM*, 34(1), 39-58.
- Grudin, J. (1994). Computer-Supported Cooperative Work: History and Focus. *IEEE Computer*, 27(5), 19-25.



What is CSCW?

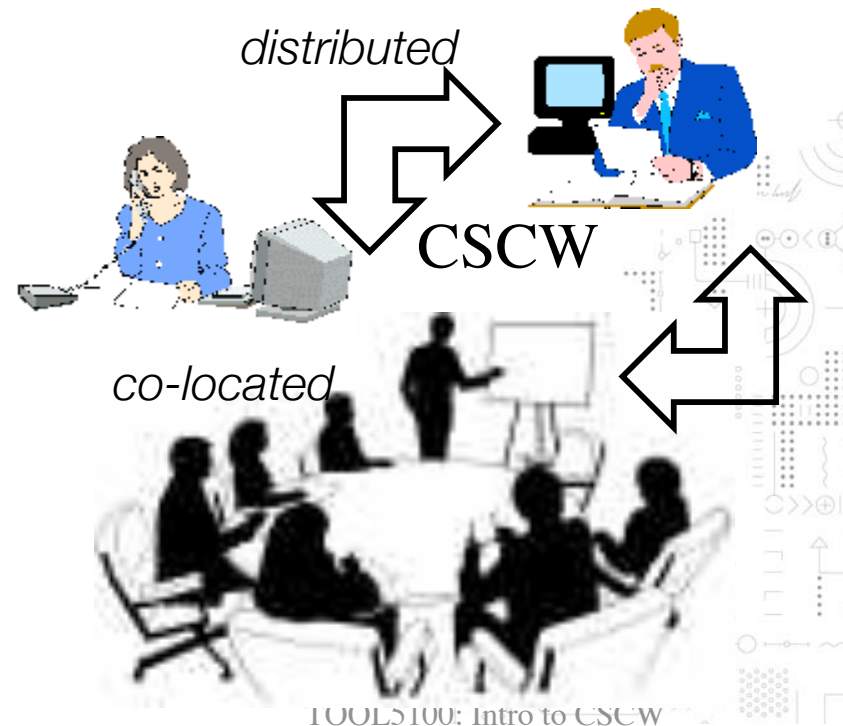
- CSCW: Computer Supported Cooperative Work is a term introduced by Irene Greif and Paul Cashman in 1984, meaning :
- *“A set of concerns about supporting multiple individuals working together with computer systems”*
- Can be divided into two main areas, associated with 1) CS and 2) CW, respectively
- The series of CSCW conferences started in 1986, it has since alternated between USA (even years) and Europe (odd years)
- By many thought of as a “spin off” from HCI

The move from HCI to CSCW

- Whereas HCI is concerned about supporting individuals, CSCW is concerned about facilitating co-located and distributed groups



HCI (human-computer interaction)



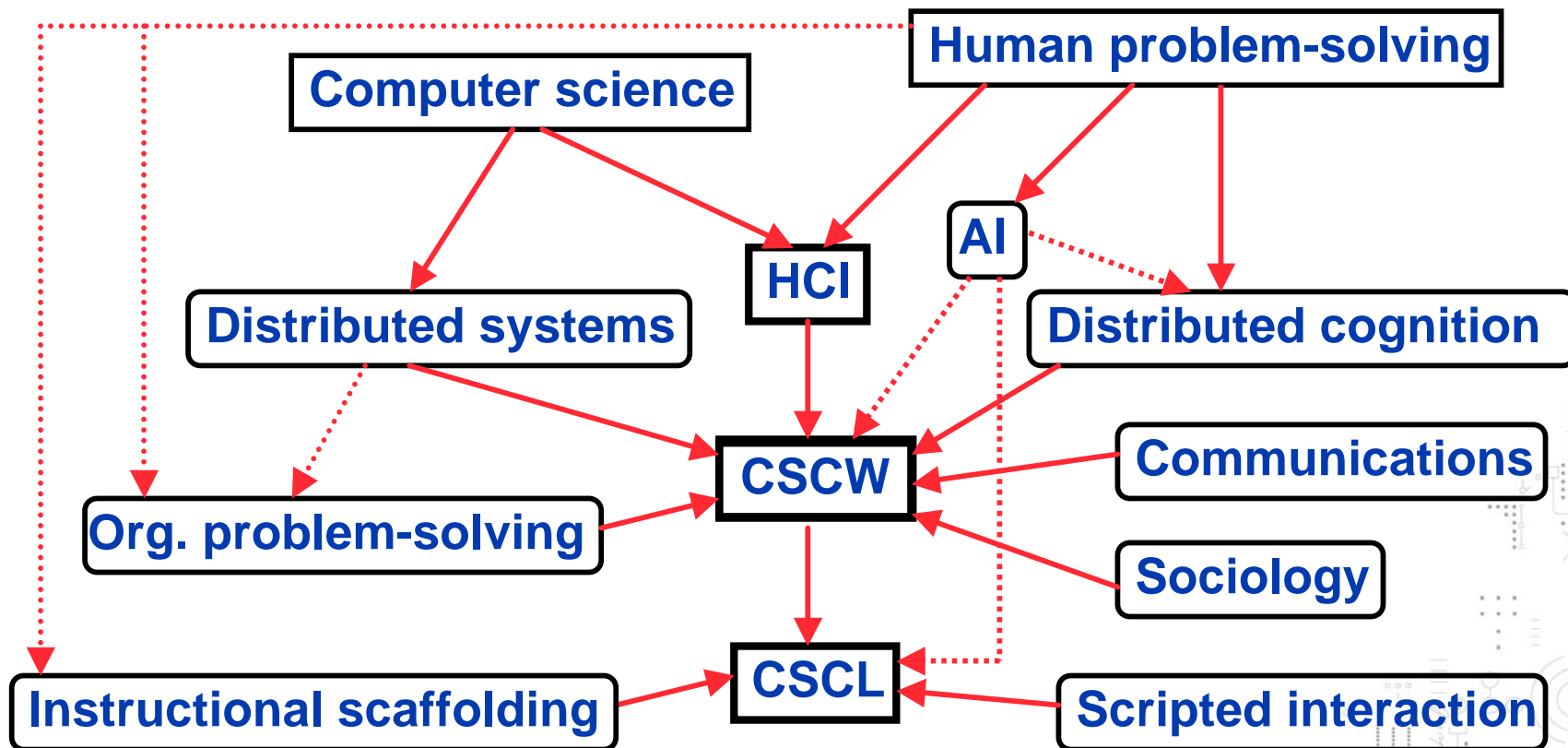


From problem solving to cooperation

- The “spin off” of CSCW from HCI was phrased by Ellis et al, something like this:
- Whereas HCI was concerned about using the computer to *solve problems*, CSCW is concerned about using the computer to *mediate human interaction*

Relationship of CSCL to HCI and CSCW

(can probably be improved)





What is groupware?

- Associated with the CS part of CSCW
- The term groupware was first used in 1982 in a paper by Johnson-Lentz in context of computer-mediated communicating (CMC)
- Defined by Ellis et al. as: *“computer-based systems that support groups of people engaged in a common task (or goal) and that provide an interface to a shared environment”*
- This creates a need for concepts to describe the various aspects of groupware, e.g. *common task/goal, interface to a shared environment, etc.*



Components of groupware

- Common task / goal
- Interface to a shared environment
- In addition, because there are more than two users, we also need to be concerned about
 - Communication support
 - Division of labor, role assignment
 - Support for joint design of a common artifact
 - Awareness of the other users who are interacting within the shared environment (in distributed settings)



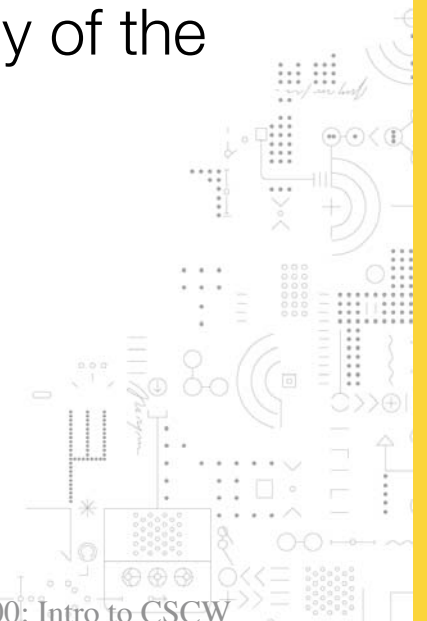
Shared environment

- Also referred to as “common information space” (Bannon & Bødker, 1997), or “shared space” in KP-Lab project (IME takes part)
- Multiple ways to design them
 - Extending a single user environment to a multi user environment (*technology-driven approach*)
 - Identifying a collaborative situation that is currently unsupported by technology (*empirical-based approach*)
 - Basing the design on theories, models or design principles originating in fields outside of software design (e.g, communication, social sciences) (*theory-based approach*)



Questions for discussion

- Do you know of groupware or other systems that have been developed according to one or more of the the above approaches?
- What other approaches to design do you now of, or could you think of that are not falling into any of the three approaches just described?





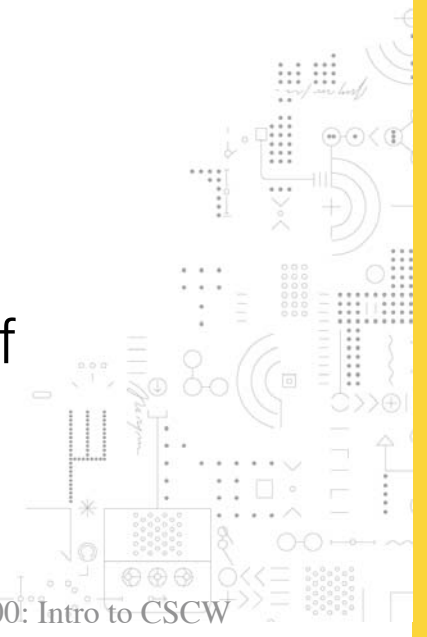
Early examples of groupware

- Ellis et al identifies the following type of groupware (1991)
 - Message systems (e.g. email)
 - Multi-user editors (e.g. *Grove* for collaborative text editing)
 - Group decision support systems (e.g. discussion forums)
 - Video conferencing systems (e.g. Marratech)
 - Intelligent information sharing systems (Information Lens)
 - Workflow coordination systems (The Coordinator)
 - Others ...



3 type of sessions with Grove

- Face-to-face (F2)
 - Two or more people sitting in front of same workstation or with individual workstations in same room
- Distributed
 - Working together at a distance
- Mixed-mode
 - Combining F2F and distributed modes of interaction





Contemporary groupware

- What are examples of groupware in use today, not mentioned by Ellis et al., and making use of one or more of the types of sessions (interaction modes)
 - 1:
 - 2:
 - 3:

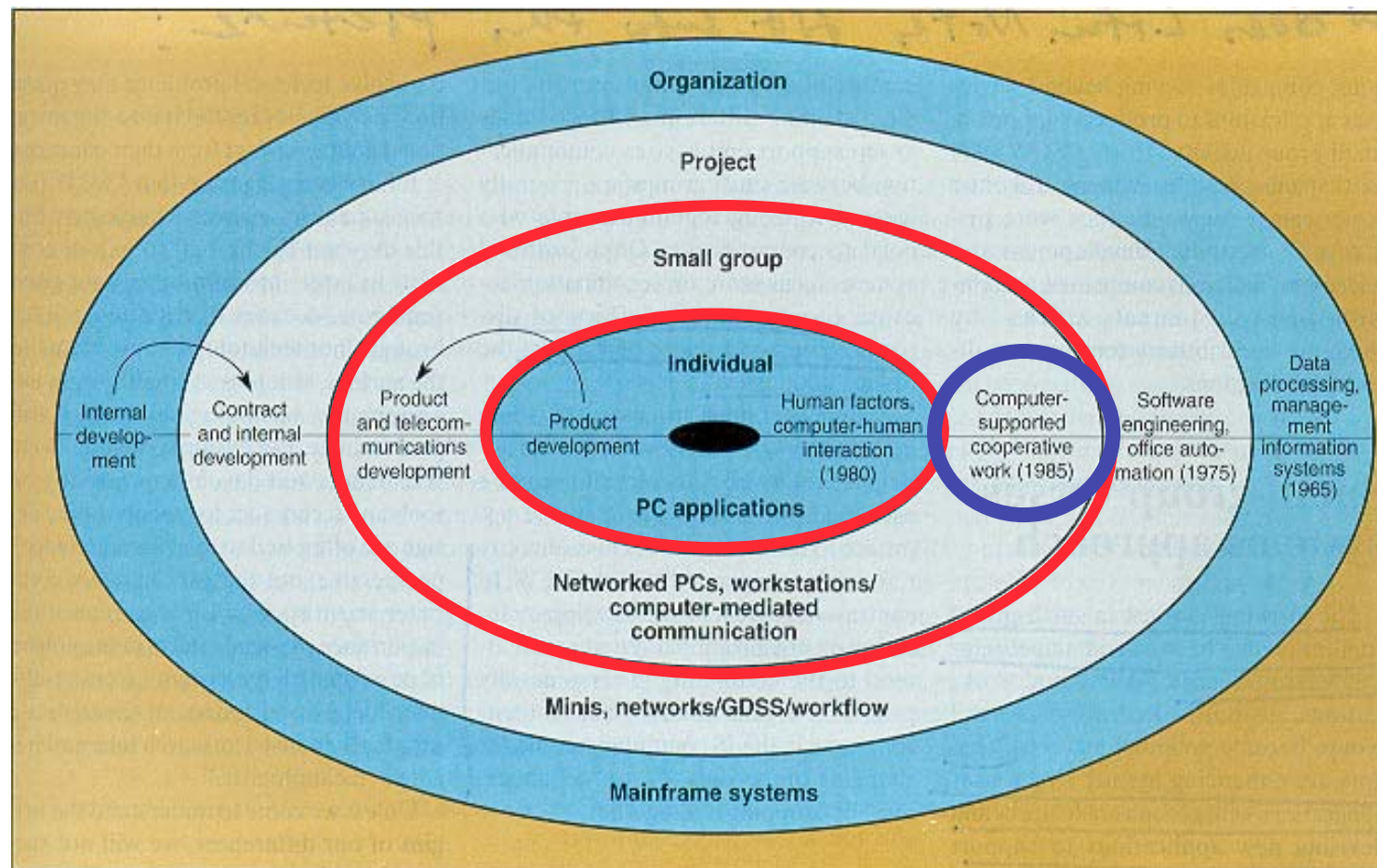




What is group work?

- Related to the CW part of CSCW
- Jonathan Grudin suggests the following:
 - Small group usually consisting of 2-3 people who works together to reach a common goal
 - There are also larger groups, but they are less efficient when supported by technology
- *Why do you think groupware works best in small groups?*
- *Any counter examples you know of?*

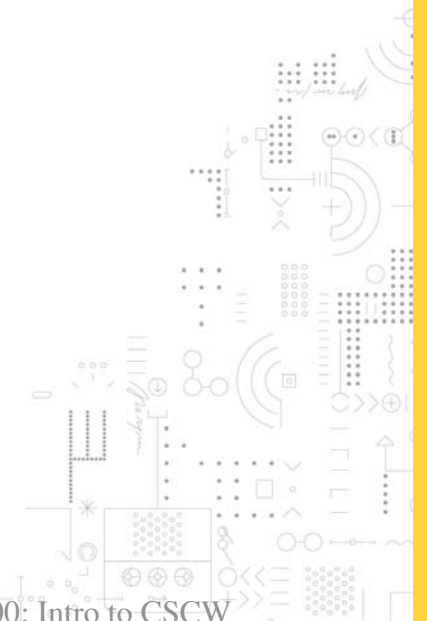
Historical development of ICT and organization according to research





Basic concepts in CSCW

- Ellis et al. suggest the following three concepts are basic for CSCW research and groupware design:
 - Communication
 - Coordination
 - Collaboration (sometimes divided into):
 - Cooperation (default in CSCW)
 - Collaboration (default in CSCL)





Supporting communication

- Groupware can be divided into two types depending on the kind of interaction it supports:
 - Synchronous communication (real time)
 - Asynchronous communication (indirect)





Synchronous communication

- Advantages
 - Good support for awareness of others (modeling F2F)
 - Appropriate for many kinds of situations resembling F2F
- Disadvantages
 - Complexity of developing from scratch technology to support this form of communication can outweigh its advantages
 - Work that require high amount of individual concentration (i.e. time consuming individual work) is not well supported (e.g. collaborative writing a paper)



Asynchronous communication

- Advantages
 - Allows time for individual reflection before making a next move while interacting (over time) with others
 - Good for tasks that naturally lend themselves to clear division of labor
- Disadvantages
 - Social interaction is minimal (in its F2F form)
 - Motivation to work together over an extend period of time may be lower and requiring incentives to work



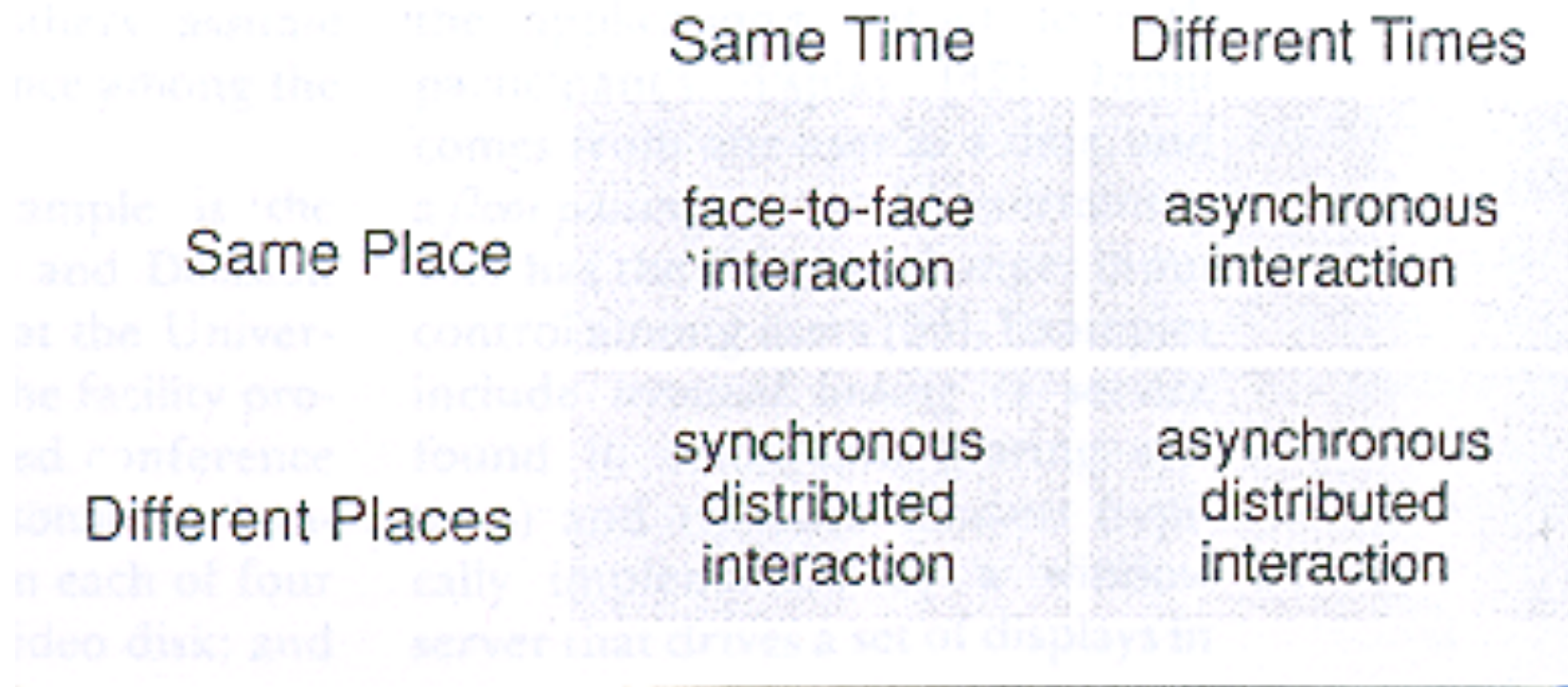
Modeling F2F vs. going “beyond being there”

- In recent years some researches have questioned the prevailing F2F metaphor of CSCW
- They instead ask how can we extend “beyond being there”
- They suggest we need *new metaphors for communication and cooperation that builds on and extends the strengths of of groupware* (e.g. paper by Jim Hollan et al.)



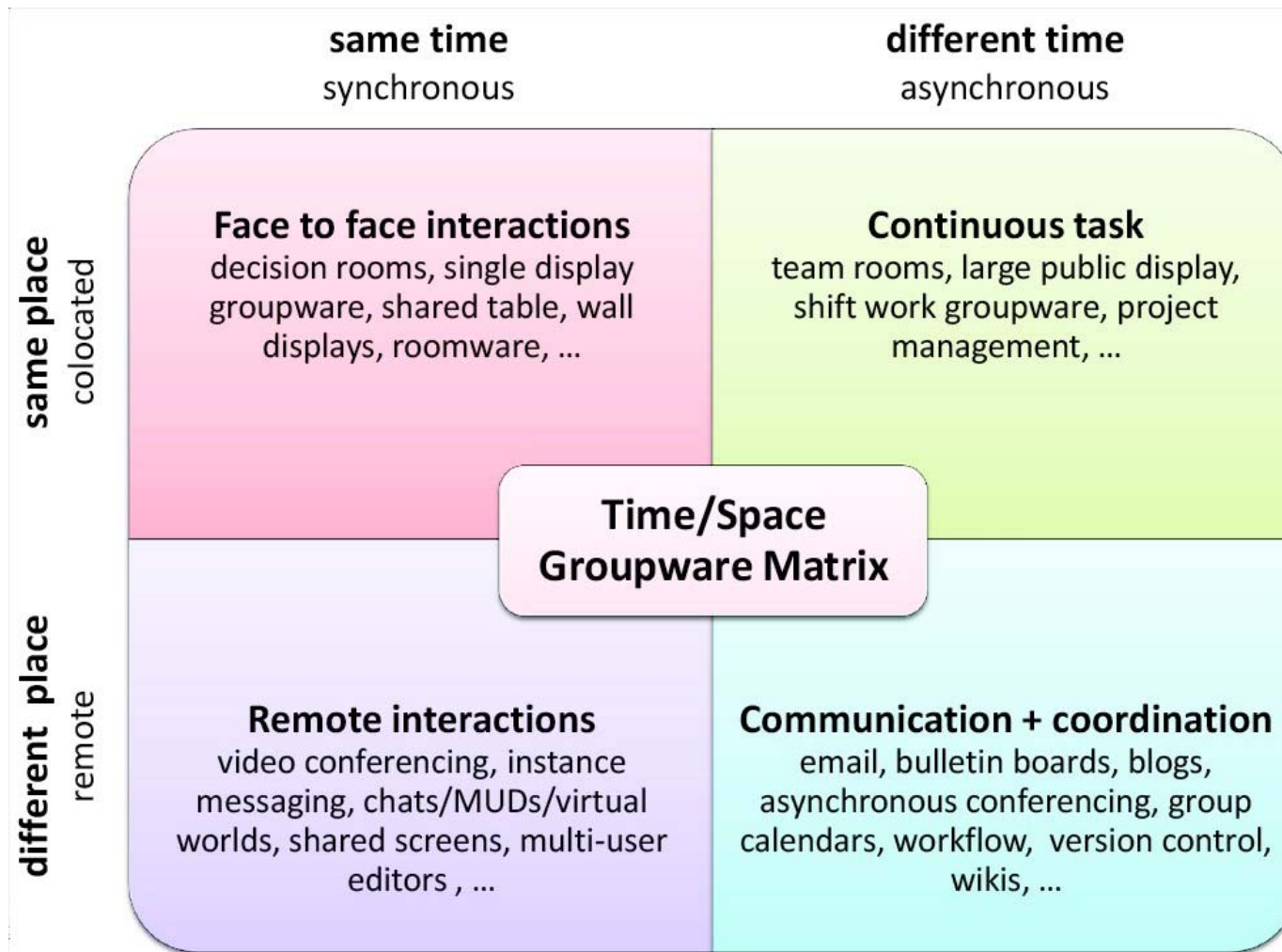
Time/place matrix

From Ellis et al, 1991





Time/place matrix with examples



URL: <http://en.wikipedia.org/wiki/CSCW>



Extended T/P matrix for CSCL

- It is common in CSCL to use groupware as the “CS” component
- *What additional dimensions would be necessary or recommended to add to the time/place matrix in order to be able to better account for the factors that emerge in educational contexts (e.g. classrooms, learning when working)?*
- *Think first about what features of the groupware would have to be added to say this is educational technology and not merely a groupware for human communication*