CSCW

Prof. Klemmer · Autumn 2007

Source:

New collaborative apps are changing CSCW

Our products | Our book | Company blog | Product blog

37signals

Work well.

Over 1 million people and businesses use our web-based applications to get things done the simple way.

We aim for the software sweet spot: Elegant, thoughtful products that do just what you need and nothing you don't.

"One of the Net's rising stars."
TIME

Basecamp™
Project management and collaboration
Collaborate with your team and clients. Schedules, tasks, files, messages, and more.

Highrise™ —OUR NEWEST PRODUCT!
Track leads, clients, vendors, simple CRM
Keep track of who your business talks to, what was said, and what to do next.

Backpack™ —JUST UPDATED!
Information organizer and calendar
Gather your ideas, to-dos, notes, photos & files online. Set email and mobile reminders.

Campfire™
Real-time group chat
It's like instant messaging, but optimized for groups. Especially great for remote teams.

Source: 37 Signals

37 Signals : Getting Real, a reminder

- **Interface First**
- **Design the interface before you start programming**
  - Too many apps start with a program-first mentality. That's a bad idea. Programming is the heaviest component of building an app, meaning it's the most expensive and hardest to change. Instead, start by designing first.
  - Design is relatively light. A paper sketch is cheap and easy to change. html designs are still relatively simple to modify (or throw out). That's not true of programming. Designing first keeps you flexible. Programming first fences you in and sets you up for additional costs.

Source: 37 Signals

What is CSCW?

- **CSCW** [is] a generic term, which combines the understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software, services and techniques.
- A.k.a. Groupware

Source: Wikipedia

Top 3 Drivers for changes in CSCW

Key Drivers

- The Network
- The Network!
- The Network!!

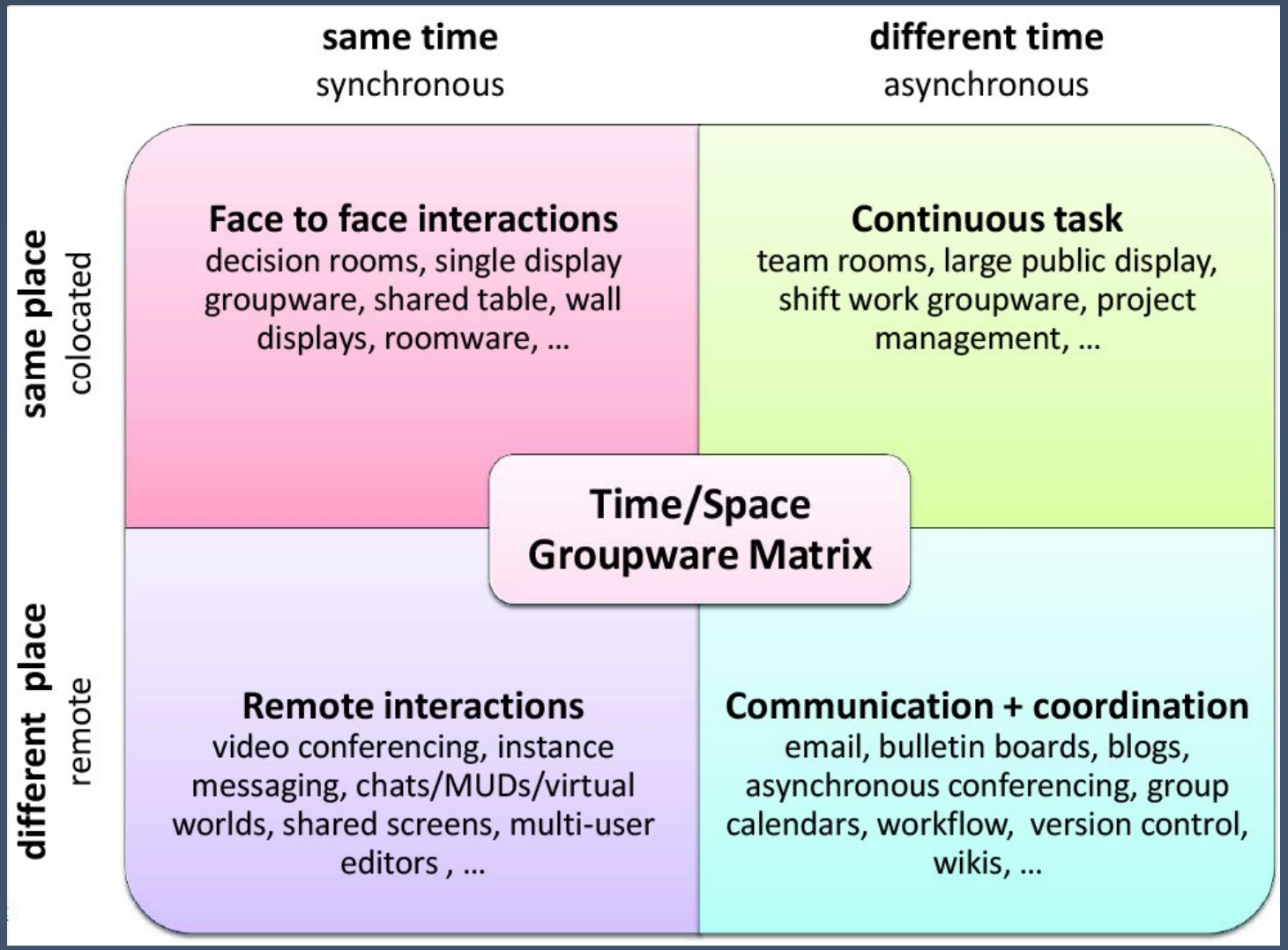
Why is CSCW design hard?

- Multiple users
- “Virtual” (not physical) presence
- The Network!!

- Virtual presence could be “Beyond Being There”
- Some distinguishing features of CSCW:
  - asynchronous communication
  - anonymous communication
  - automatically archive of communication

Source: Hollan, Jim and Stornetta, Scott. “Beyond Being There.” CHI 1992.

CSCW Matrix



Source: Wikipedia. Johansen, 1988 in Baecker, R.M.; Others, (1995). Readings in human-computer interaction: toward the year 2000. Morgan Kaufmann Publishers.

Different time / different place

Communication + Coordination

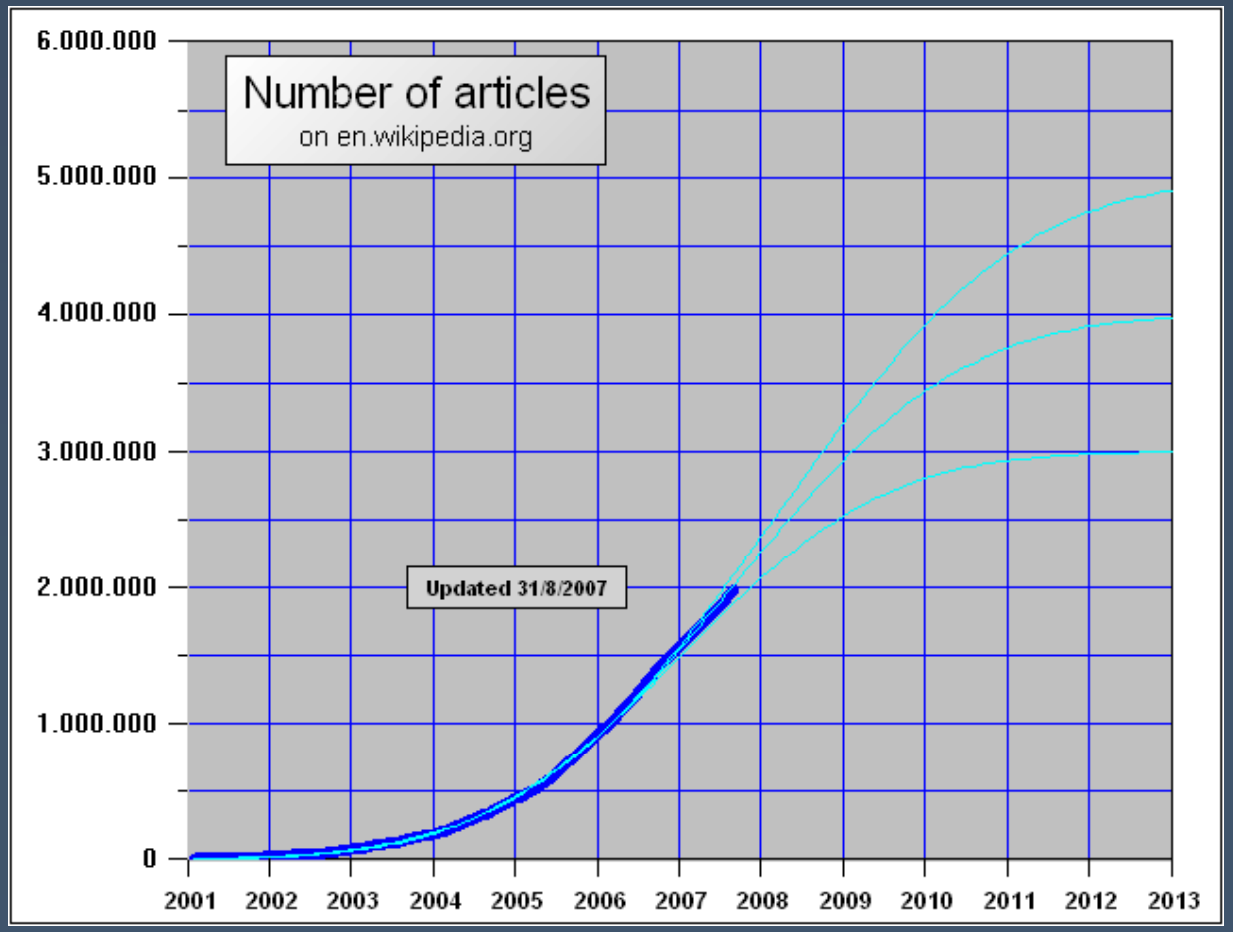
- Wiki
- Blogs
- Workflow
- Version Control

- Shared participation over time
- Geographically world wide

Source: Wikipedia.

Example: growth of different time / different place

Wikipedia



Wikipedia growth

Source: Wikipedia.

Same time / different place

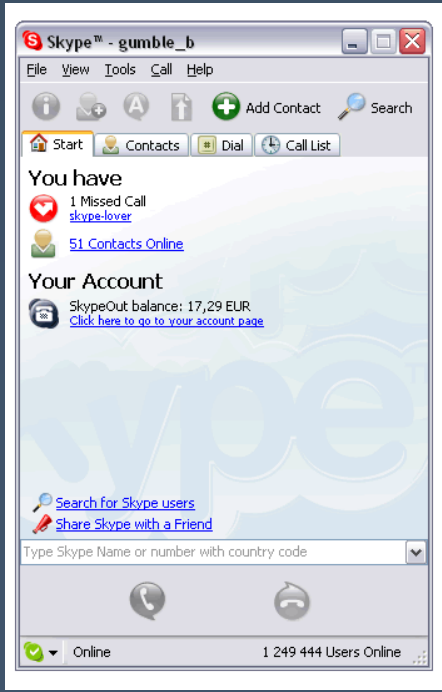
Remote interaction

- Video-Conferencing,
- Real-time groupware
- Messaging (Instant messaging, Email)
- Virtual worlds
- Multi-User editors
- Shared Screen (vnc)

- Multi-user participation
- Nonverbal cues
- Differing levels of fidelity (text, voice, avatar)

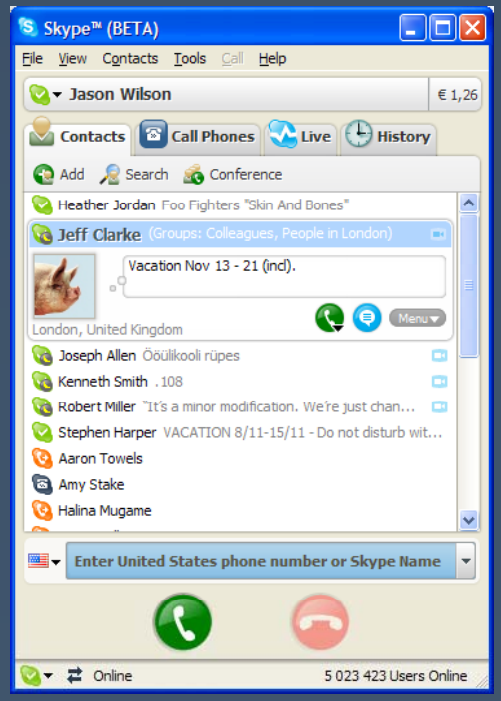
Source: Wikipedia.

Example: recent enhancements in same time / different place



Skype 1.0

Skype



Usage and traffic

Date	Total user accounts *in millions*	Skype to Skype minutes *in billions*	Skype Out minutes *in billions*	Net revenue USD *in millions*
Q1 2006	95	6.9	0.7	35
Q2 2006	113.1	7.1	0.8	44
Q3 2006	135.9	6.6	1.1	50
Q4 2006	171.2	7.6	1.5	66
Q1 2007	195.5	7.7	1.3	79
Q2 2007	219.6	7.1	1.3	90

As of June 30, 2007, Skype had a cumulative number of unique user accounts of 220 million. Users may register more than once, and as a result, may have more than one account.

It was reported that nine million concurrent Skype users were online as of January 29, 2007.[13]

Date	[14] Users online	Days
2007-01-29	9,000,000	82
2006-11-08	8,000,000	71
2006-08-29	7,000,000	155
2006-03-27	6,000,000	66
2006-01-20	5,000,000	92
2005-10-20	4,000,000	155
2005-05-18	3,000,000	93
2005-02-14	2,000,000	117
2004-10-20	1,000,000	418
2003-08-29	0	-

Source: Wikipedia.

Different time / same place

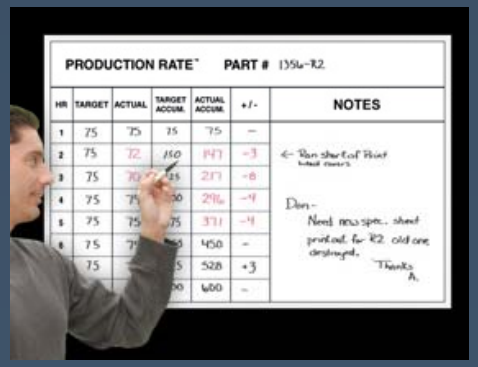
Continuous task

- Team rooms
- Large displays

Source: Wikipedia.

Example: ideas for different time / same place

Lean Manufacturing:
Visible System Metrics



Machine Number	Next Job SKU#	Current Job%	OEE %
15	1531	75%	72%
17	1572	95%	77%
21	1514	44%	82%
22	1499	15%	93%
23	1528	26%	63%

Location	Flow Rate	Temperature	PPM Emission
Area 1	245	355	11000
Area 2	355	400	12000
Area 2A	423	350	12500
Area 3	564	275	13000
Area 4	343	320	11500
Area 5	250	330	11000
Area 5A	452	390	15500
Area 5B	356	345	11750
Area 6	475	400	12000
Area 6A	276	275	12000
Area 6B	285	275	13500

Source: http://www.magnatag.com/, http://www.adaptivedisplays.com/

Same time / same place

Face to face interaction

- Roomware
- Shared tables, wall displays
- Group Decision Support Systems (GDSS)
- Single display groupware

Source: Wikipedia.

The original example: same time / same place

With "PowerPoint Slides"

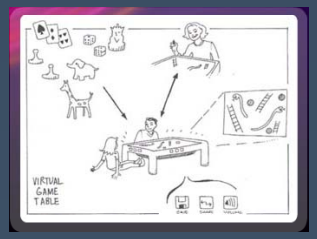
Without "Slides"

Is PowerPoint in need of CSCW innovation?

Source: http://www.presentationzen.com/presentationzen/2006/03/index.html

Example : same time / same place

Microsoft Surface



Source: Microsoft Surface, http://www.microsoft.com/surface/

Challenges in Implementing CSCW

Table 1. Eight challenges for groupware developers

1. **Disparity in work and benefit.** Groupware applications often require additional work from individuals who do not perceive a direct benefit from the use of the application.

2. **Critical mass and Prisoner's dilemma problems.** Groupware may not enlist the "critical mass" of users required to be useful, or can fail because it is never to any one individual's advantage to use it.

3. **Disruption of social processes.** Groupware can lead to activity that violates social taboos, threatens existing political structures, or otherwise demotivates users crucial to its success.

4. **Exception handling.** Groupware may not accommodate the wide range of exception handling and improvisation that characterizes much group activity.

5. **Unobtrusive accessibility.** Features that support group processes are used relatively infrequently, requiring unobtrusive accessibility and integration with more heavily used features.

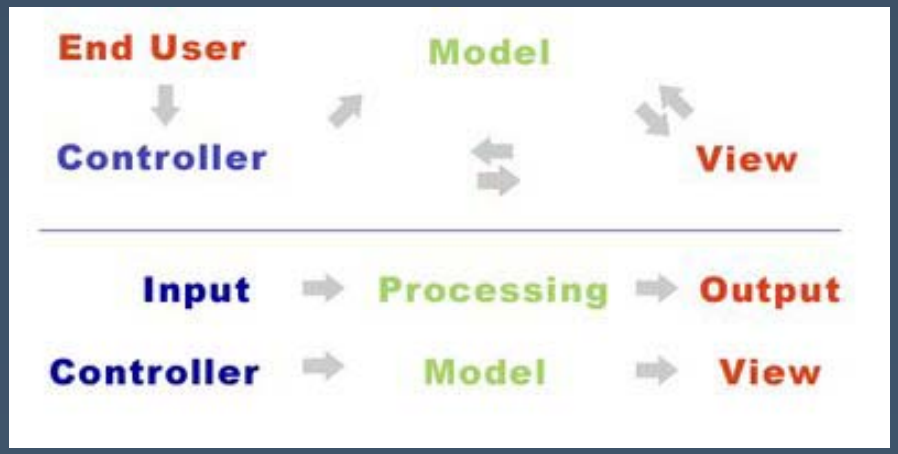
6. **Difficulty of evaluation.** The almost insurmountable obstacles to meaningful, generalizable analysis and evaluation of groupware prevent us from learning from experience.

7. **Failure of intuition.** Intuitions in product development environments are especially poor for multiuser applications, resulting in bad management decisions and an error-prone design process.

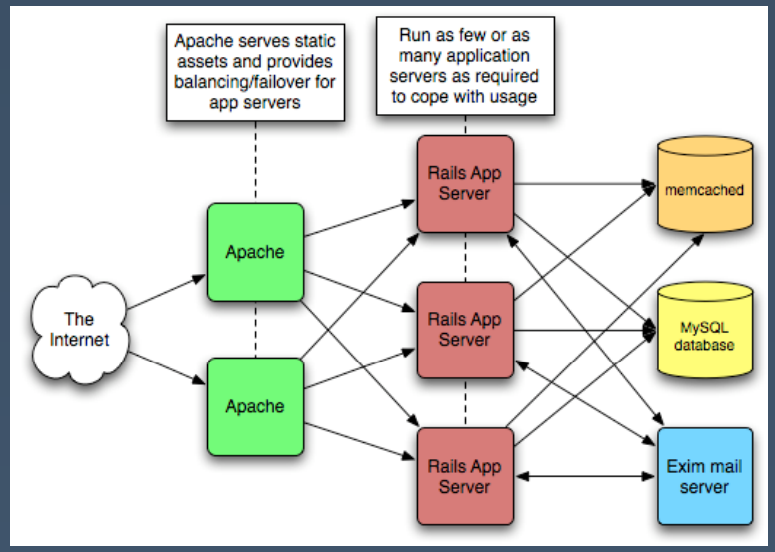
8. **The adoption process.** Groupware requires more careful implementation (introduction) in the workplace than product developers have confronted.

Source: Grudin, Jon. "Eight Challenges for Groupware Developers". CACM, 1994.

Implementing different time / different place systems



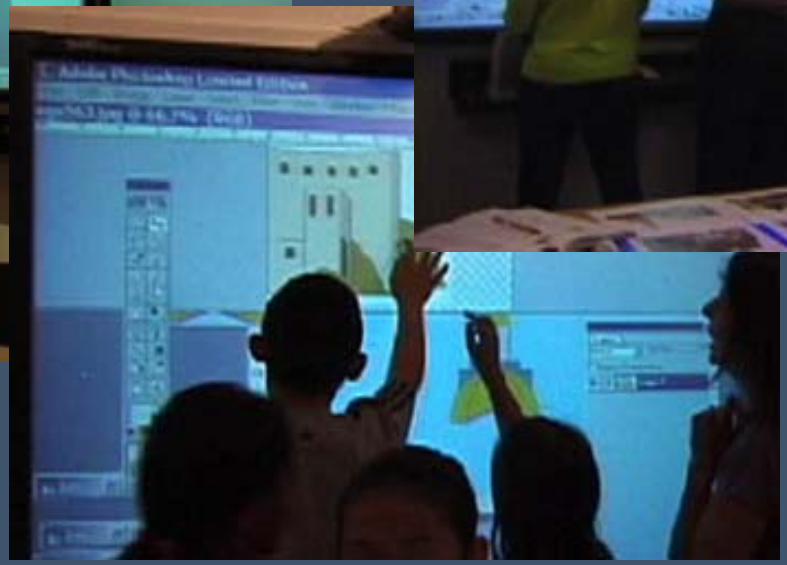
Model View Controller

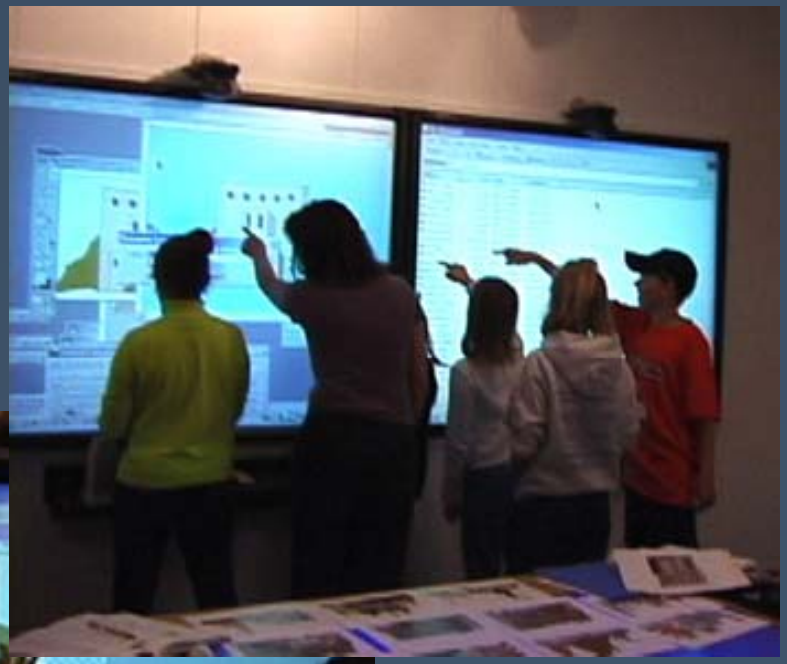


Ruby on Rails

Source: http://railsruby.blogspot.com/2006/03/mvc-model-view-controller-architecture.html, http://www.rubaidh.com/services/hosting/system-architecture

Eye to the future: iRoom same time / same place @ Stanford





Source: Johanson, Brad and Armando Fox and Terry Winograd. "The Stanford iRoom and Interactive Workspaces Project". Stanford.