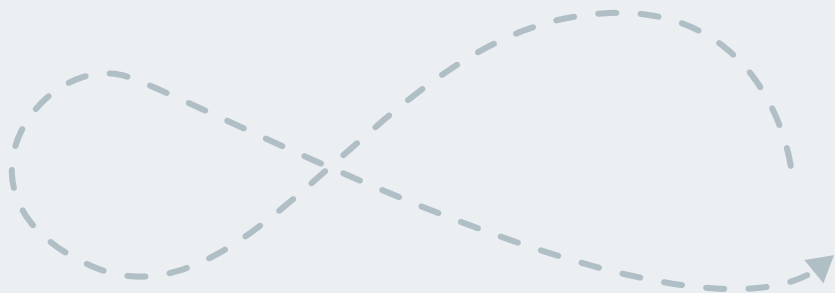


ONLINE work

INF 251 CSCW

Seungmin Jeong



Today's Readings



Beyond Being There.

Jim Hollan and Scott Stornetta. CHI (1992).

Groupware and social dynamics: 8 challenges for developers.

Jonathan Grudin. CACM (1994).

Distance Matters.

Gary M. Olson and Judith S. Olson.
Human-computer interaction 15 (2000)





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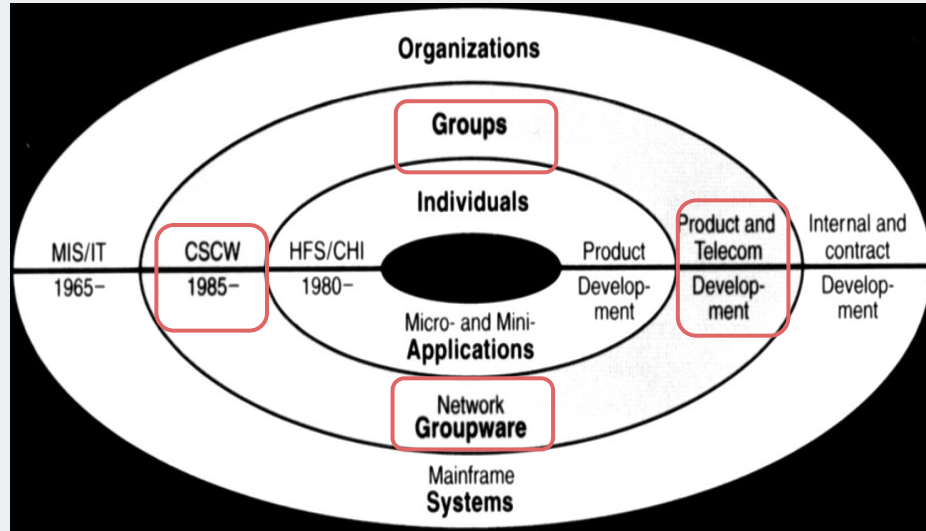




01 Background

What happened around 1990s?

Since the mid of '1980



Conditions

- 1 Inexpensive for all members
- 2 Well-supported infra (e.g., Network)
- 3 Groups being familiar with computer and willing to use new software
- 4 Developers interested in multi-user applications after single-user application domains are matured.

Since the mid of '1990

E.g., NetMeeting



- Bundled by Microsoft in Windows 95 through XP
- Video calls, Desktop sharing
- When I remember NetMeeting in the mid 1990's, five words come to mind: "Can you hear me now?"

After Covid19

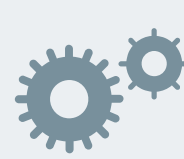


- **Zoom**, about 300 million daily meeting participants at its peak usage in 2020
- **Microsoft Teams** and **Slack**, managing projects and workflows across dispersed teams
- Microsoft Teams is integrated well with other **Microsoft Office services**, enhancing productivity for many organizations

02

Challenges of Distance work

Can we overcome?



4 Concepts of Successful Distance Work

	Success	Failure
Common Ground	<ul style="list-style-type: none">• Strong pre-existing relationship• shared knowledge and awareness	<ul style="list-style-type: none">• Difficulties in establishing trust and rapport
Coupling of work	<ul style="list-style-type: none">• Loose coupling• Allowing more independent work	<ul style="list-style-type: none">• Tightly coupling• Frequent and intricate coordination
Collaboration Readiness	<ul style="list-style-type: none">• Willingness for engagement• Collaborative culture, Well-rewarded	<ul style="list-style-type: none">• Non-motivation for collaboration• Non-familiar with collaborative culture
Technology Readiness	<ul style="list-style-type: none">• Technological infrastructure• Sufficient training	<ul style="list-style-type: none">• Lack of infrastructure• No resource to learn

3 Fundamental Challenges

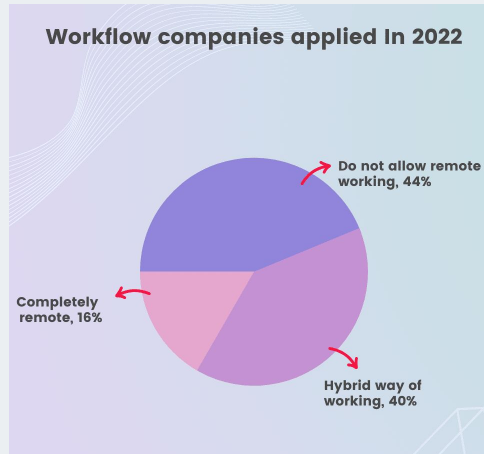
Common ground, context, and trust	<ul style="list-style-type: none">• Lack the rich contextual cues → hard to establish common ground• Lack of physical presence and interactions → hard to build trust, closely tied to context and common ground
Different time zone	<ul style="list-style-type: none">• Interfering with tight-coupled or urgent work• Asynchronous work technology can support, but not perfect• Careful planning for global distribution is required
Culture	<ul style="list-style-type: none">• Affecting communication styles, work ethics, conflict resolution methods, and decision-making processes.• Cultural gaps cannot be bridged by technology• Training and cultural awareness are crucial to adapt to each other's cultural norms and communication styles.

8 Challenges of Groupware

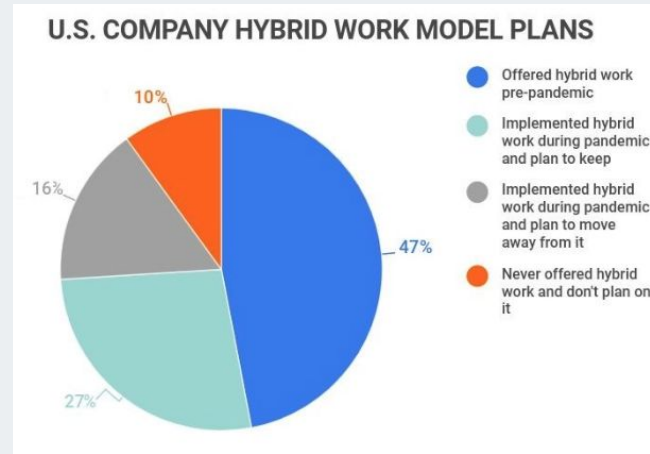
- **Disparity in Work and Benefit**
 - Hard to offer benefits to all users, including those who input additional effort to maintain the system
- **Critical Mass and Prisoner's Dilemma**
 - Individuals might opt out if they do not see personal benefits, leading to the system's failure.
- **Disruption of Social Process**
 - Have to consider existing workflows and social, political, and organizational dynamics in workplace.
- **Exception Handling**
 - Be flexible enough to accommodate the unforeseen and the non-standard situations that frequently arise in collaborative environments
- **Unobtrusive Accessibility**
 - Carefully consider diversity and design inclusive interface by continuous testing
- **Difficulty on Evaluation**
 - Not only individual productivity but also group dynamics, communication, and collaboration
- **Failure of Intuition**
 - Hard do develop for multi-users, resulting in bad management and error-prone design
- **The adoption process**
 - Have to carefully implement in the workplace, requiring longitudinal studies to understand the true effectiveness of groupware

Nevertheless, we do it

56% of companies allow remote/hybrid work



27% of companies plan to keep hybrid after Covid19





Discussion



**What allowed remote work to survive even after COVID-19?
What challenges were addressed?**

4 concepts of distance work

- Common Group
- Coupling of Work
- Collaboration Readiness
- Technology Readiness

3 fundamental challenges

- Common Group, context, and trust
- Different time zone
- Culture

8 Challenges of groupware

- Disparity in Work and Benefit
- Critical Mass and Prisoner's Dilemma
- Disruption of Social Process
- Exception Handling
- Unobtrusive Accessibility
- Difficulty on Evaluation
- Failure of Intuition
- The adoption process



Discussion



Do you agree with executives that in-office collaboration is important? If so/not, why?

"65% of executives believe that having employees work in an office is very important to increasing employee productivity." - Kalcheva (2024)



02

Media for Collaboration

What are the characteristics and mechanisms we should pursue?

Characteristics of Media for Common Ground

- **Copresence**
 - same physical environment.
- **Visibility**
 - visible to each other.
- **Audibility**
 - speech.
- **Contemporality**
 - message received immediately.
- **Simultaneity**
 - both speakers can send and receive.
- **Sequentiality**
 - turns cannot get out of sequence.
- **Reviewability**
 - able to review other's messages.
- **Revisability**
 - can revise messages before they are sent.

Medium	Copresence	Visibility	Audibility	Cotemporality	Simultaneity	Sequentiality	Reviewability	Revisability
6 Face to face	•	•	•	•	•	•		
4 Telephone			•	•	•	•		
5 Video conference		•	•	•	•	•		
5 Two-way chat				•	•	•	•	•
2 Answering machine			•				•	•
2 E-mail							•	•
2 Letter							•	•

Characteristics for Collaboration

- **Rapid Feedback**
 - For quick corrections and agreements
- **Multiple Channels**
 - Voice, Gesture, Expression, etc.
 - To convey redundancy for complex message
- **Personal Information**
 - To consider contributors' background
- **Nuanced Information**
 - To precisely convey small differences
- **Shared Local Context**
 - In similar situation together
 - For social bonding and mutual understanding
- **Informal "hall" time before & after**
 - Interactions before arrival and after departure
 - Additional discussion and social bonding
- **Conference**
 - Discuss together in a single location
 - To enhance clarity of communication

- **Individual Control**
 - Easily change focus
 - For flexible and rich monitoring reactions
- **Implicit Cues**
 - To understand contextual information
- **Spatiality of Reference**
 - Physical layout of documents or whiteboards
 - People and ideas are referred to spatially

Figure 10. How well today's and future technologies can support the key characteristics of collocated synchronous interactions.

Characteristic	Today	Future	
Rapid feedback		•	?
Multiple channels	o	•	
Personal information	o	•	
Nuanced information	o	•	
Shared local context			
Informal "hall" time before and after	o	o	?
Coreference		o	
Individual control		o	
Implicit cues		o	
Spatiality of reference		o	

Note. • = well supported; o = poorly supported.



Discussion



What are your strategy to choose for collaboration between in-person or distance work? Why?

8 characteristics for command ground

- Copresence
- Visibility
- Audibility
- Contemporaneity
- Simultaneity
- Sequentiality
- Reviewability
- Revisability

10 characteristics for collaboration

- Rapid Feedback
- Multiple Channels
- Personal Information
- Nuanced Information
- Shared Local Context
- Informal “hall” time before & after
- Conference
- Individual Control
- Implicit Cues
- Spatiality of Reference



Discussion



Please share some designs or interactions of current technologies that help you engage in online work, by reflecting these characteristics

8 characteristics for command ground

- Copresence
- Visibility
- Audibility
- Contemporaneity
- Simultaneity
- Sequentiality
- Reviewability
- Revisability

10 characteristics for collaboration

- Rapid Feedback
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- Informal “hall” time before & after
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4 Mechanisms for Media Collaboration

- **Ephemeral Interest Groups**
 - Temporary discussion forums on any topic or event within a community's electronic space
 - Can foster informality and inclusivity, allowing participants to feel companionship, even across distances.
- **Meeting Others**
 - Electronic persona including profiles, postings, or activity status updates.
 - Can lower the barriers to initiating communication and informal communications, which can help build relationships and maintain connections over time
- **Anonymity**
 - can encourage open and honest dialogue about sensitive or controversial topics without fear of judgment or repercussion.
- **Semisynchronous Discussions**
 - Messages might be collected over a period and then released together at a specific time.
 - Contributors can voice their opinions without being influenced by the first response, allowing various perspectives to be shared and improving the quality and inclusivity of discussions.



Discussion



When you need help from people other than family, friends, or colleagues? What media do you usually use and why?

4 frameworks for media collaboration

- Ephemeral Interest Groups
- Meeting Others
- Anonymity
- Semisynchronous Discussions



Wrap Up





Can you define what challenges are you facing in distance work today?

What's the crucial challenges for you?





How to design future online work tech?

- Understanding work nature
- Understanding purpose of online collaboration
- Recognizing the distinction between face-to-face and distance work for future design of CSCW technology



The background features a light gray color with two stylized human figures, a man on the left and a woman on the right. Above them are dark blue speech bubbles and faint, dashed gray lines that suggest movement or a network. The man is wearing a light blue polo shirt, dark pants, glasses, and a watch. The woman is wearing an orange off-the-shoulder top, dark pants, and a large hoop earring. Both are gesturing with their hands as if in conversation.

Thanks!

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