Human-Computer Interaction

CSCW

Professor Bilge Mutlu

Questions

To ask questions during class:

» Go to slido.com and use code **#2938904** or direct link or scan QR code

» Anonymous

» I will monitor during class

Today's Agenda

» Topic overview: *CSCW*

» Discussion

Topic overview: *CSCW*

What is CSCW?

What is CSCW?

Definition: CSCW "combines the understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software, services and techniques."[1]

What is groupware?

Definition: Groupware includes application software designed to help people working on a common task to attain their goals.[2]

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[1] Lojeski (2009). Leading the virtual workforce: How great leaders transform organizations in the 21st century.

[2] Wikipedia

CSCW = the group working process + the technology[1]

[1] Lojeski (2009). Leading the virtual workforce: How great leaders transform organizations in the 21st century.

What do you mean by group work processes?

1. *Individual human characteristics*, e.g., conversation patterns
2. *Organizational aspects*, e.g., structure and culture of the organization
3. *Group work design issues*, e.g., involvement in the work design process
4. *Group dynamics*, e.g., group decision making, collaboration[1]

[1] Lojeski (2009). Leading the virtual workforce: How great leaders transform organizations in the 21st century.

What do we mean by CSCW technology?

1. *Communication mechanisms*—enabling people to communicate, e.g., videoconferencing
2. *Shared work space facilities*—enabling people to view and work on the same electronic space, e.g., screen sharing
3. *Shared information facilities*—enabling people to view and work on a shared set of information, e.g., cloud-based document sharing
4. *Group activity support facilities*—augmenting group work processes, e.g., simultaneous document editing[1]

[1] Lojeski (2009). Leading the virtual workforce: How great leaders transform organizations in the 21st century.

Time/space Groupware Matrix[3]

	Synchronous	Asynchronous
Collocated	**Face-to-face interactions** Decision rooms, single display groupware, shared table, wall displays, roomware	**Continuous task** Team rooms, large public display, shift work groupware, project management
Remote	**Remote interactions** Video conferencing, instant messaging, chats/MUDs/virtual worlds, shared screens, multi-user editors	**Communication + coordination** Email, bulletin boards, blogs, asynchronous conferencing, group calendars, workflow, version control, wikis

[3] YouTube

Face-to-face interactions[4]

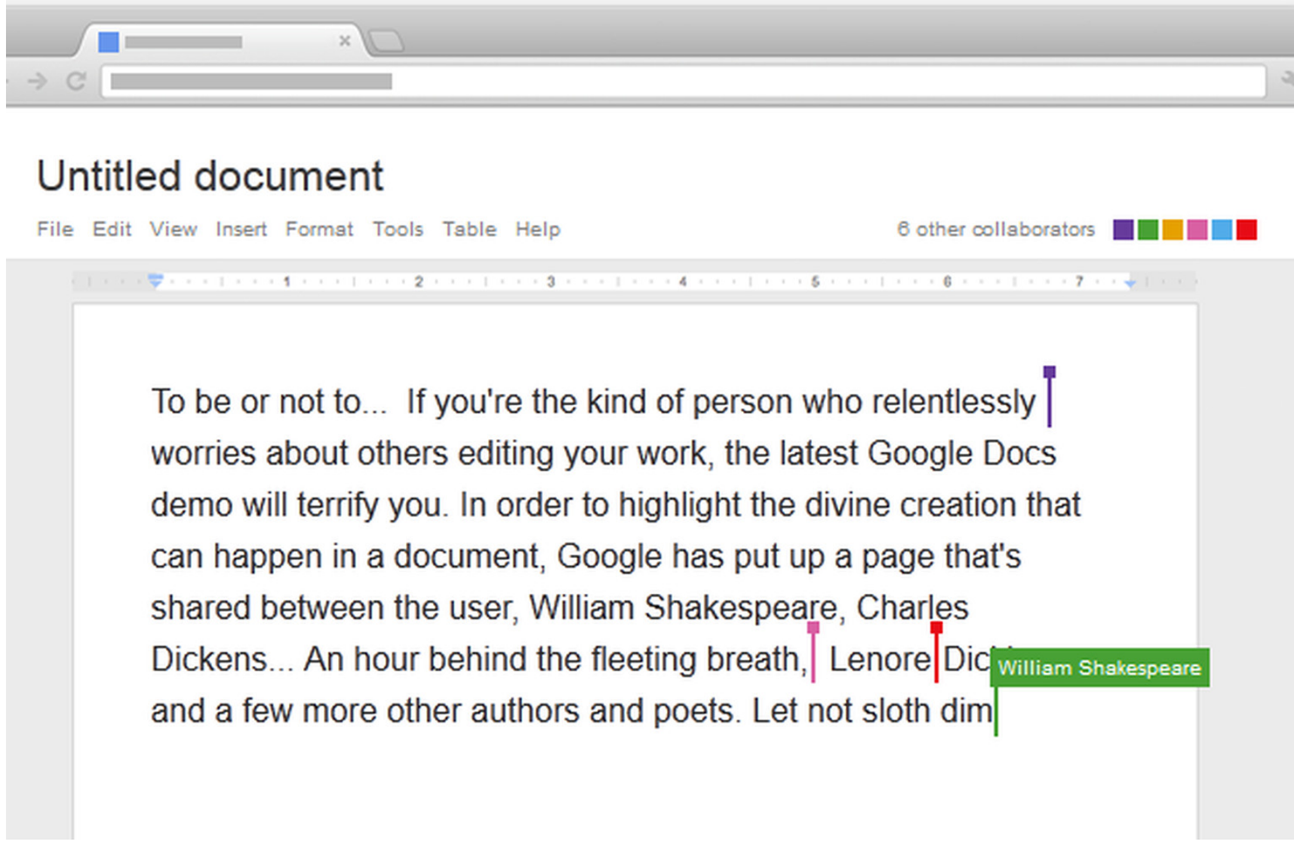
Right: group decision rooms (e.g., NASA Mission Control Center, Johnson Space Center)

[4] Andro, 2018, Digital libraries and crowdsourcing

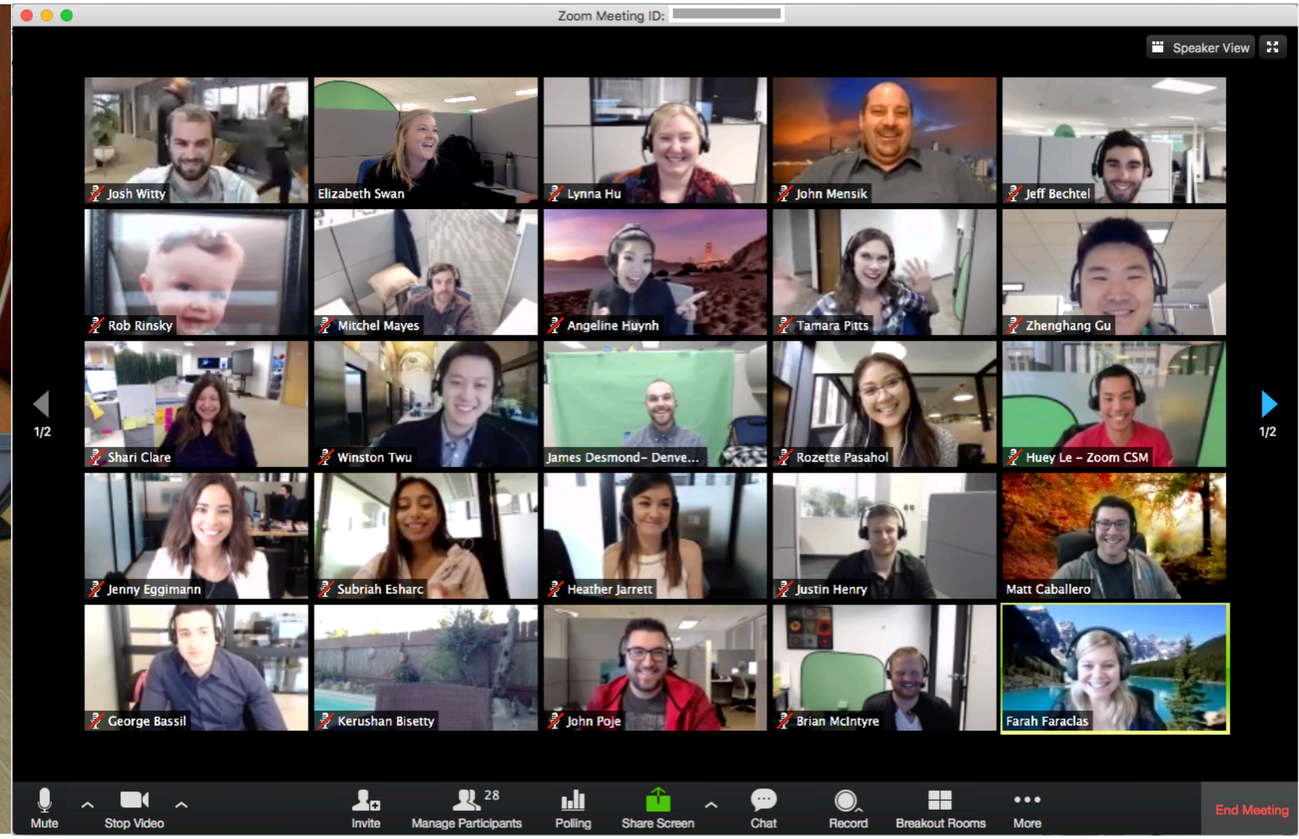
Remote interactions[5]

Right: collaborative authoring in Google Docs

Next slide: different forms of videoconferencing



[5] Image source: Left, Right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Speaker View
Josh Witty
Elizabeth Swan
Lynna Hu
John Mensik
Jeff Bechtel
Rob Rinsky
Mitchel Mayes
Angeline Huynh
Tamara Pitts
Zhenghang Gu
Shari Clare
Winston Twu
James Desmond- Denve...
Rozette Pasahol
Huey Le - Zoom CSM
Jenny Eggimann
Subriah Esharc
Heather Jarrett
Justin Henry
Matt Caballero
George Bassil
Kerushan Bisetty
John Poje
Brian McIntyre
Farah Faraclas
1/2
1/2
Mute
Stop Video
Invite
Manage Participants
28
Polling
Share Screen
Chat
Record
Breakout Rooms
More
End Meeting

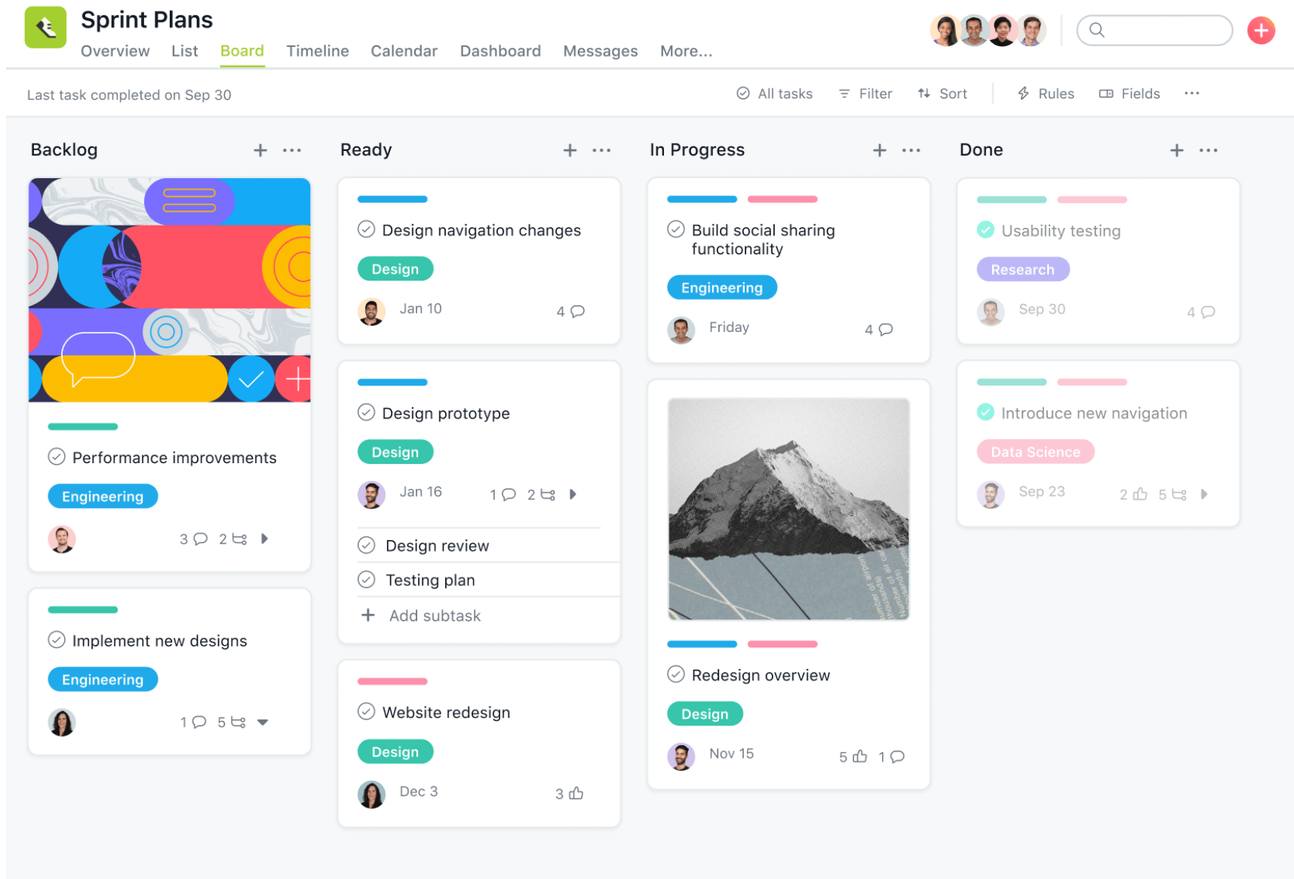
Continuous task[6]

Right: persistent project management displays

[6] YouTube

Communication + coordination[7]

Right: project management software tools



[7] YouTube

What is crowdsourcing? How is it related to CSCW?

Advances in technology—including communication, computing, and transportation—have fundamentally changed organizations.

Yesterday's organization:

» persistent

» collocated

» physically connected

Today's & tomorrow's organization:

» ad-hoc

» distributed

» digitally connected

*What is **virtual distance**?*

Definition: The perceived distance between two of more individuals or groups, caused by the persistent and percasive use of technology-mediated work and communications.[1]

Three types of distance:

1. **Physical:** geographical, temporal, organizational
2. **Operational:** team size, meeting frequency, tech-savviness
3. **Affinity:** values, communication style, trust, interdependency

Technical and organizational innovation aims to close these distances.

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[1] Lojeski (2009). Leading the virtual workforce: How great leaders transform organizations in the 21st century.

*What is **crowdsourcing**?*

Definition: Crowdsourcing is a sourcing model in which individuals or organizations obtain goods and services, including ideas and finances, from a large, relatively open and often rapidly-evolving group of internet users; it divides work between participants to achieve a cumulative result.[2]

[2] Wikipedia

CROWDSOURCING
NBC NEWS
LEARN

What are characteristics of crowdsourcing?

- Other people doing work for you
- Work is structure to facilitate efficiency and reaching expertise
  - Tasks can be outsourced at any scale—"microtasks"
  - Workers can be found instantaneously, e.g., within seconds
  - Access to worker quality and expertise

Where does crowdsourcing come from?

Milestone 1. 13th century, Hugh of Saint-Cher, O.P., coordinated monks to index scripture.

Milestone 2. Longitude act of 1714 offered prize money to anyone who could determine the longitude of a ship to avoid accidents, followed by several examples of reward-based crowdwork.

Milestone 3. In 1794, Gaspard de Prony devised microtasks of addition and substaction for 80 unemployed heirdressers to develop logarithmic and trigonometric tables.[4]

[4] Andro, 2018, Digital libraries and crowdsourcing

How is crowdsourcing different from contract work?

Similar, but different:

» Contracting is handled by a 3rd party

» Contracting, tasking, and work happens instantaneously

» More competitive, lower-cost, instantaneous

5

[5] Image source: Left, Right

Example Markets

Design, product development, datawork, reputation management, errands

- Online
  - Design — 99 Designs
  - Datawork — Amazon's Mechanical Turk; CrowdFlower
  - Reputation — Fiverr
- Local
  - Errands — TaskRabbit, Taskr
  - Taxi — Uber, Lyft
- Flash Teams

How 99designs works

Where is crowdsourcing going?

Scaffold organizations that bring experts together to explore product/service ideas — "flash teams," "flash organizations"

- Scalable with new skillsets, workload
  - Examples: Quirky, OpenIdeo, Innocentive

This all sounds great. Should I quit grad school and start crowd work?

Not so fast. Work in the "gig economy" has many potential drawbacks for workers:

» Lack of labor law protections, employment benefits[8]

» Low pay, social isolation, low work quality, exhaustion[9]

Overall, this is a rapidly changing area with technological, societal, legal, and ethical facets.

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[8] Donovan et al. (2016). What does the gig economy mean for workers?

[9] Tan et al. (2021). The ethical debate about the gig economy: A review and critical analysis.

Discussion Format

- Group discussion ~15 minutes
  - Separate to 9 groups randomly
  - Discuss with your group members
  - Take notes in the shared doc– pick your group number
- Summary from each group & discussion ~10 minutes

Discussion Questions

- What are some of the groupware systems are we using for this class? How would you categorize them?
- What are examples of the challenges that Grudin highlighted you see in today's groupware?
- What principles do you see carried over to non-work contexts?
- What relevant external resources have you found?
- How is crowdsourcing different from CSCW?
- What are examples you have found?
- What do you think are technological implications?
- What do you think are organizational implications?
- What do you think are societal implications?