

Flower-Pop

Facilitating Casual Group Conversations With Multiple Mobile Devices

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Casual Group Conversation



- A relaxed conversation
- Discloses personal information
- Builds up intimacy among members

Casual Group Conversation



- More prominent in East-Asian cultures

➔ Diverse **sociocultural background** contributes to these difficulties

Conversation Facilitators



Can mobile phones facilitate conversations like a skilled human facilitator?

Research Aim



- ① Impact of a mobile system's passive & active conversation facilitation
- ② Sociocultural aspects that affect casual group conversations

Explore potential roles that mobile systems can play in casual group conversations

RELATED WORK

RELATED WORK

Technology-Mediated Solutions

Conversation Visualization



Table Talk Enhancer
[Ogawa et al., CEA'12]

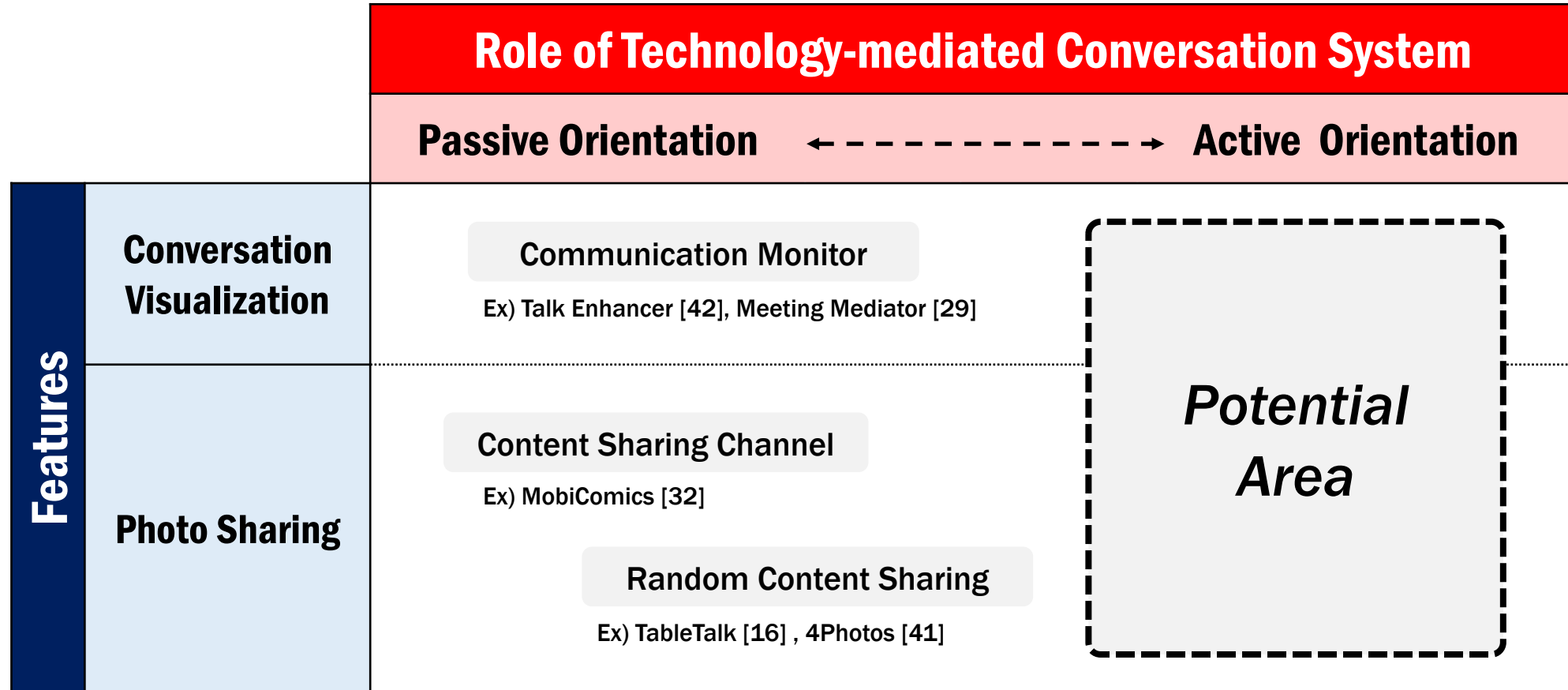
Photo (Content) Sharing



TableTalk
[Ferdous et al., UbiComp'16]

RELATED WORK

Technology-Mediated Solutions

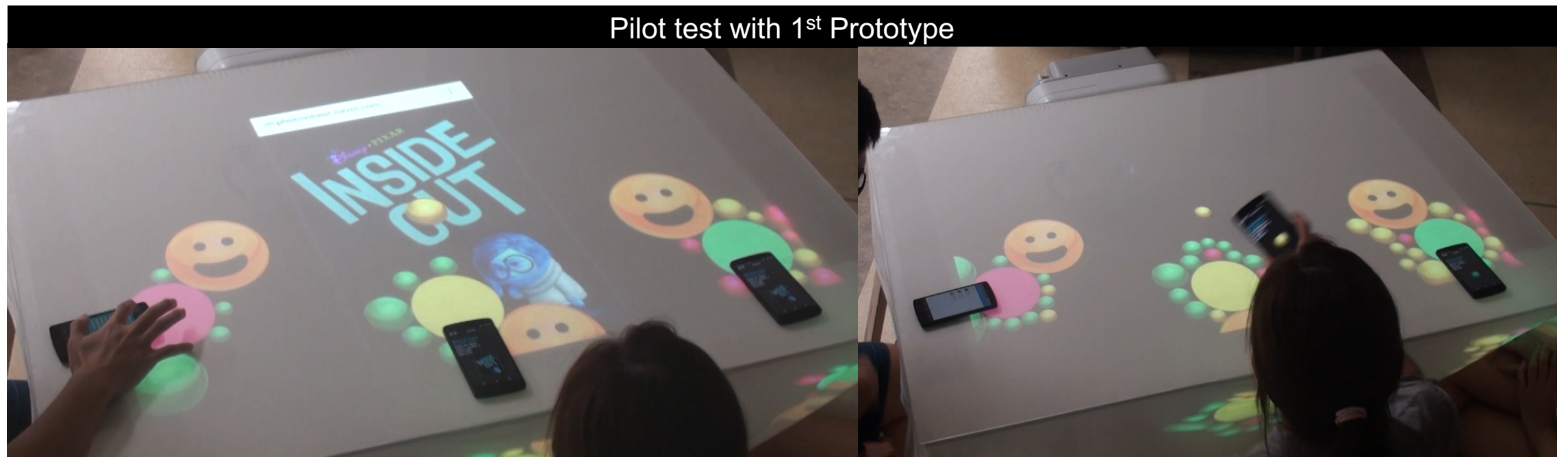
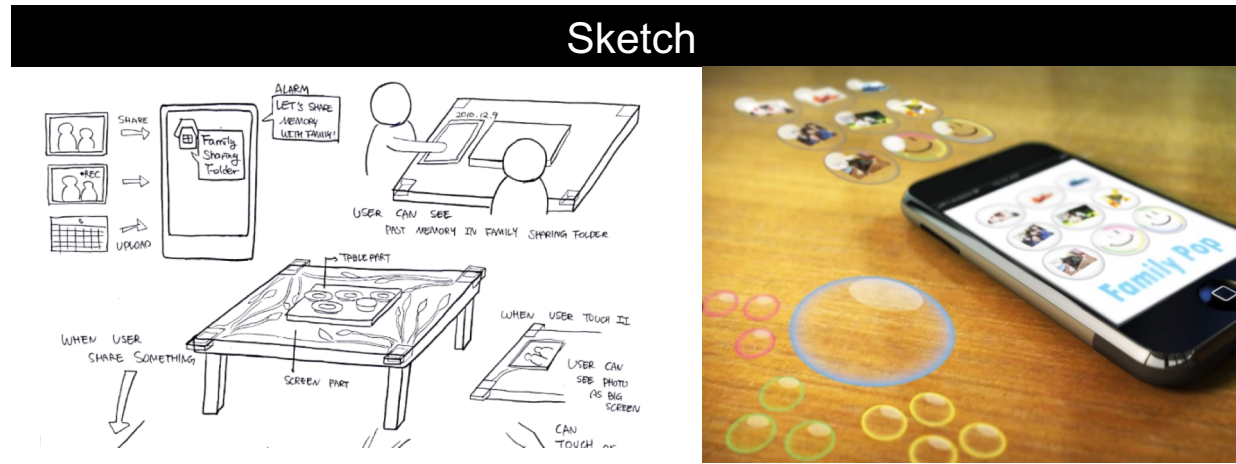


Toward the design of mobile systems that *proactively intervene* to facilitate casual group conversations

DESIGN OF FLOWER-POP

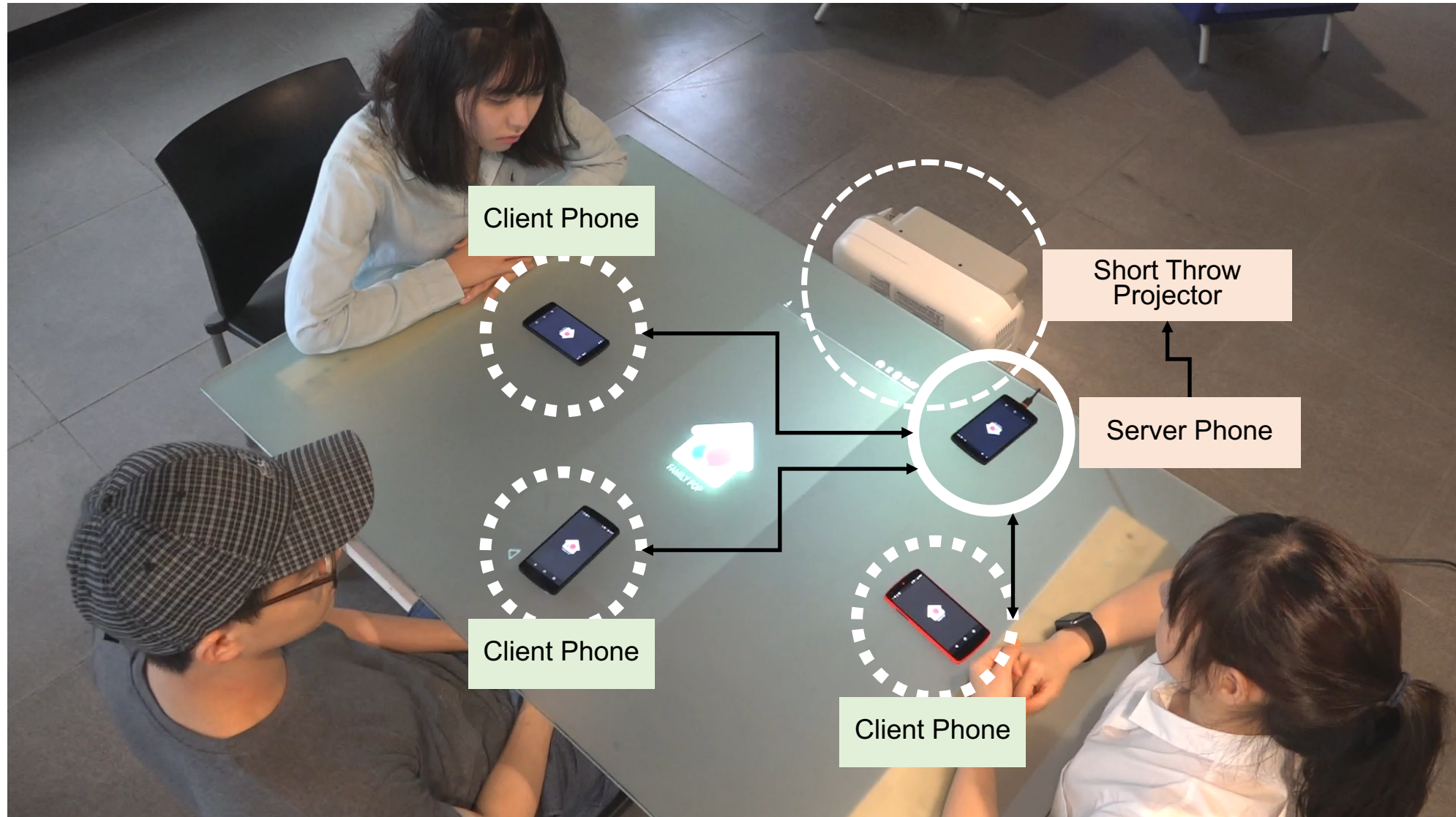
DESIGN OF FLOWER-POP

Flower-Pop's Initial Design and a Pilot Test



DESIGN OF FLOWER-POP

System Configuration and Architecture



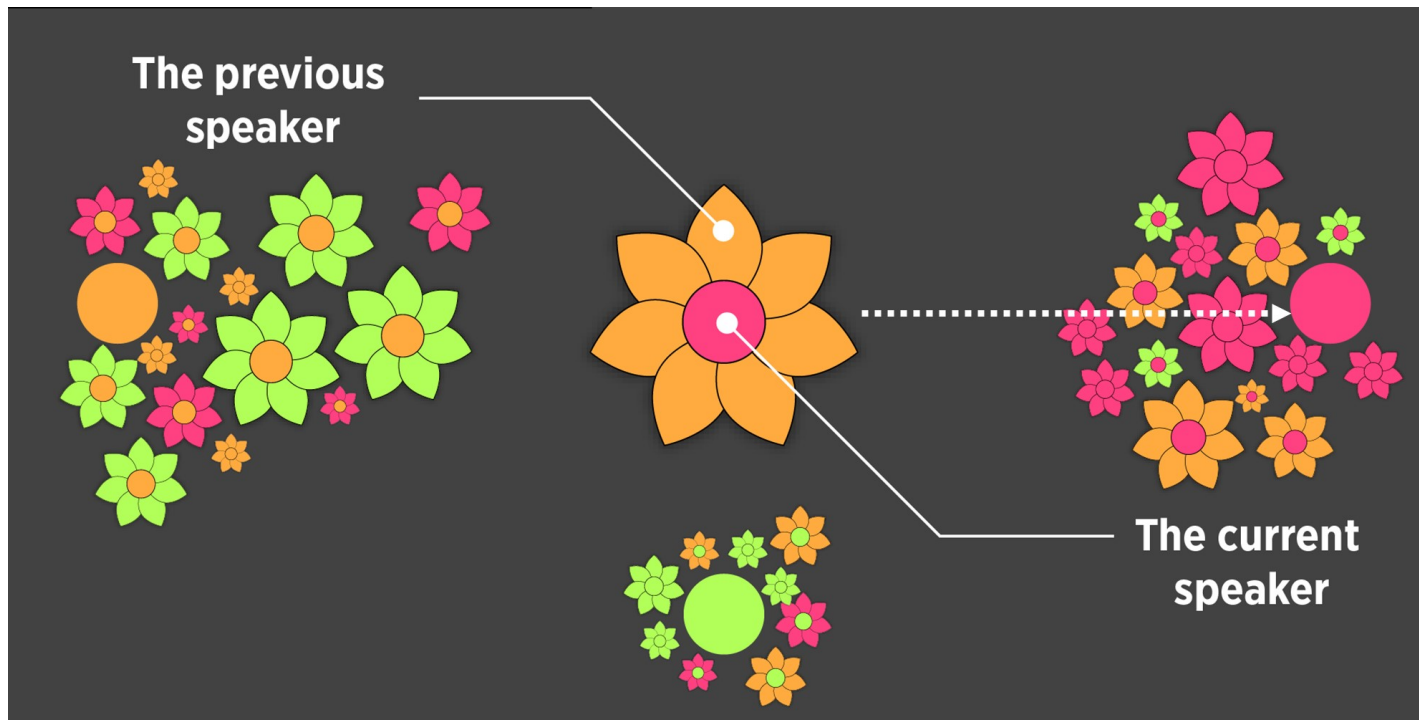
Flower-Pop's Final Design

Monitoring and Visualizing Group Conversations

		Role of Flower-Pop			
		Passive Orientation	← ----- →		Active Orientation
Features	Conversation Visualizing	Supporting User's to Send 'Like' Flower	Creating 'Talk' & 'Laughter' Flowers	Encourage Participation by 'Bee'	Potential Area
	Photo Sharing	Supporting User's Spontaneous Sharing	Supporting Random Photo Sharing	Encouraging Photo Sharing	

Flower-Pop's Final Design

Conversation direction & duration visualization

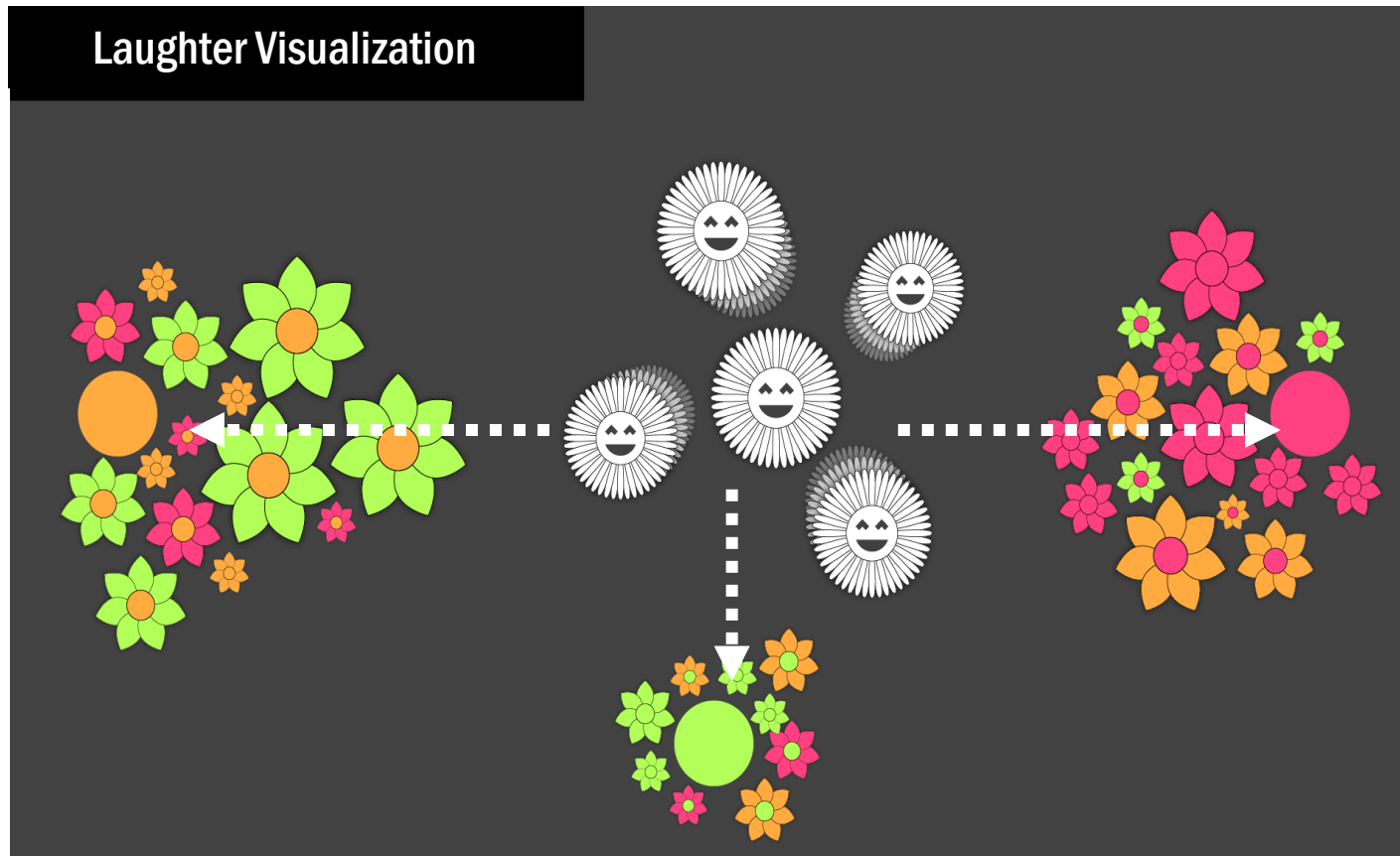


- Color = speaker & direction
- Size = duration of utterance

Ex. *Pink* Person responded to *Orange* Person

Flower-Pop's Final Design

Group laughter visualization

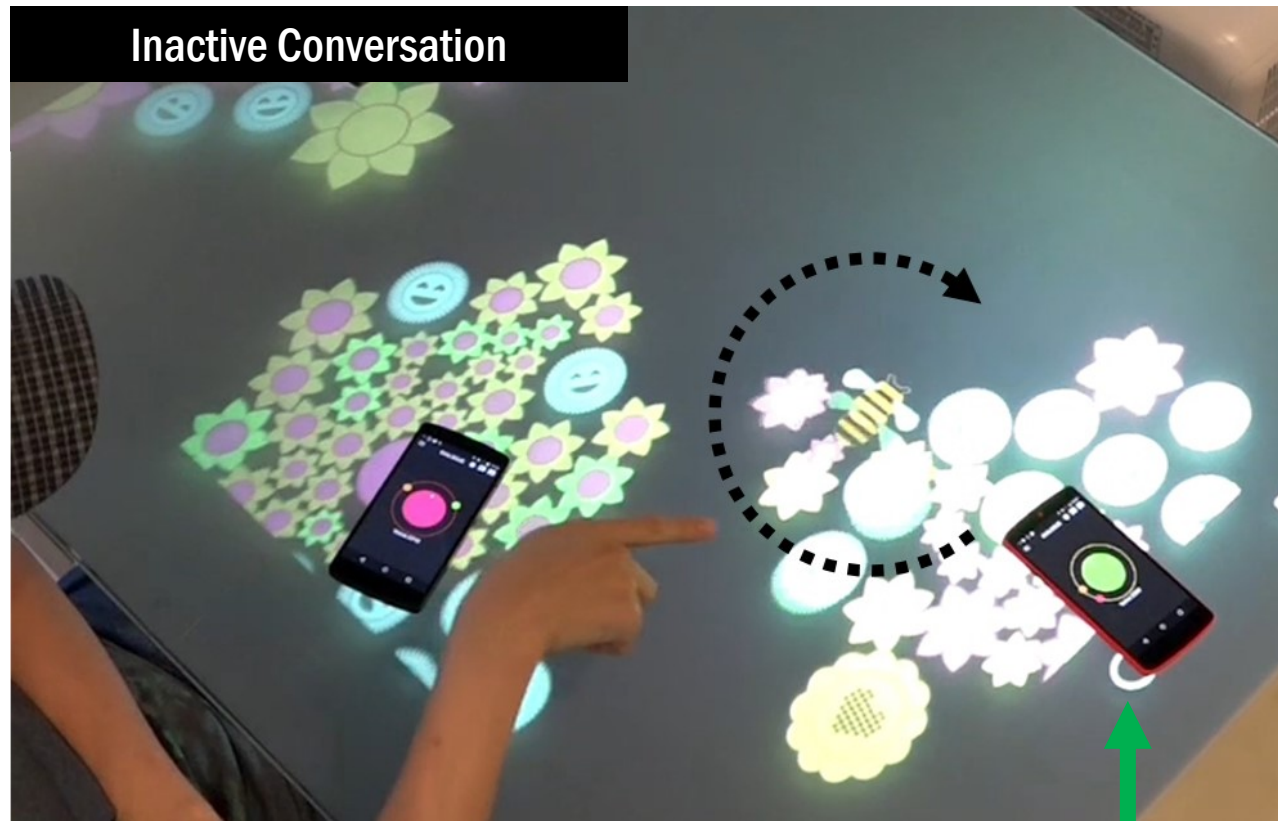


- Laughter detection
- 'Laughter' flower is sent to all participants

Ex. Group members *laughed* together

Flower-Pop's Final Design

Inactive conversation detection and notification



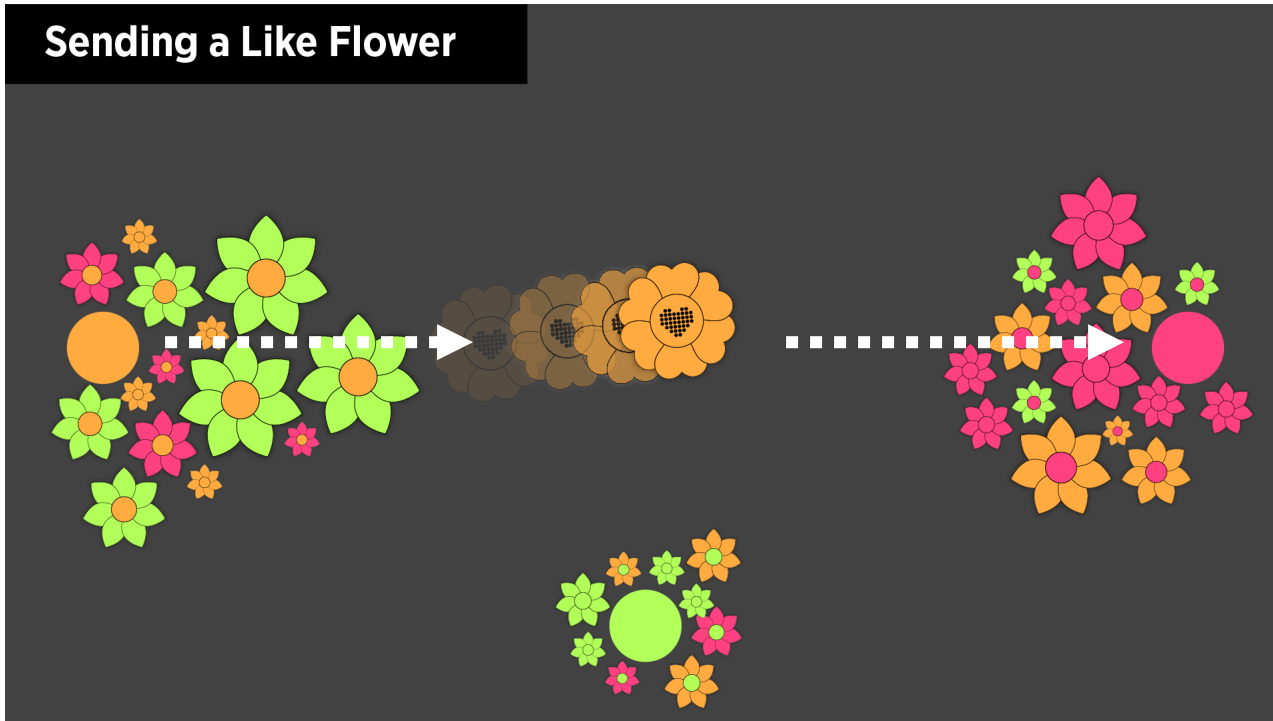
- Recognition of low participation
- Actively induces the member to talk more with a 'bee' flying around the member's phone

*Ex. Bee flies around the least active speaker's smartphone
(green user)*

Flower-Pop's Final Design

"Like Flower" as a positive expression toward a speaker

Sending a Like Flower



Ex. *Orange* Person sends a Like Flower to *Pink* Person

- Users can intentionally express their reactions
- Send 'Like' Flower as a sympathetic expression



Flower-Pop's Final Design

Moderating Photo Sharing

		Role of Flower-Pop			
		Passive Orientation	← ----- →		Active Orientation
Features	Conversation Visualizing	Supporting User's to Send 'Like' Flower	Creating 'Talk' & 'Laughter' Flowers	Encourage Participation by 'Bee'	Potential Area
	Photo Sharing	Spontaneous Sharing	Random-forced Sharing	Encouraged Sharing	

Flower-Pop's Final Design

Moderating Photo Sharing



User selects a photo

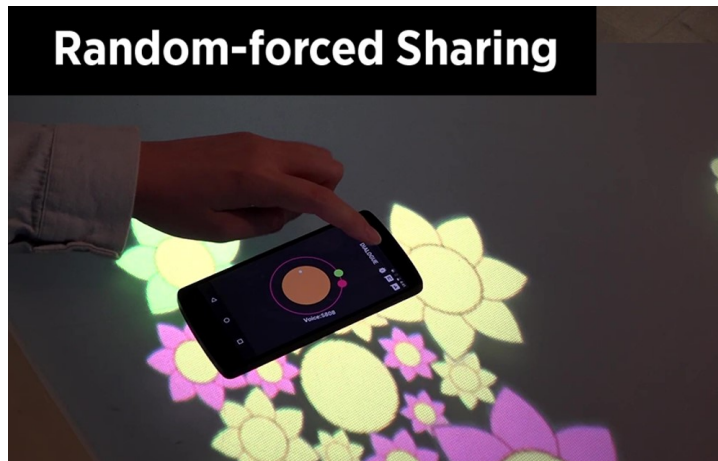


Selected photo is displayed

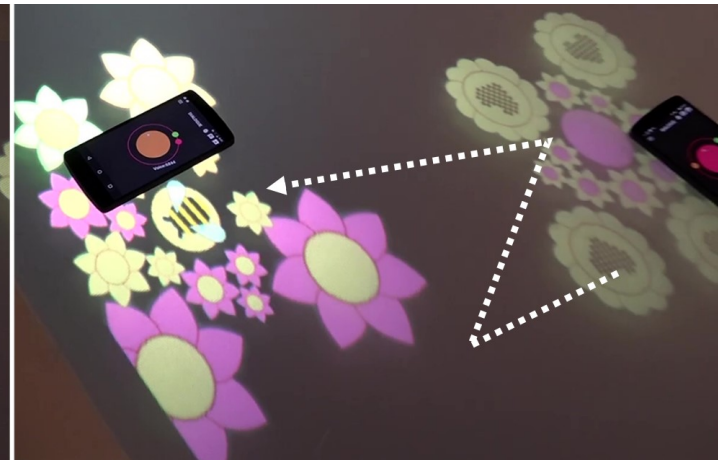
- Users select photos and share whenever they want
- System's role is limited to acting as a channel for sharing photos

Flower-Pop's Final Design

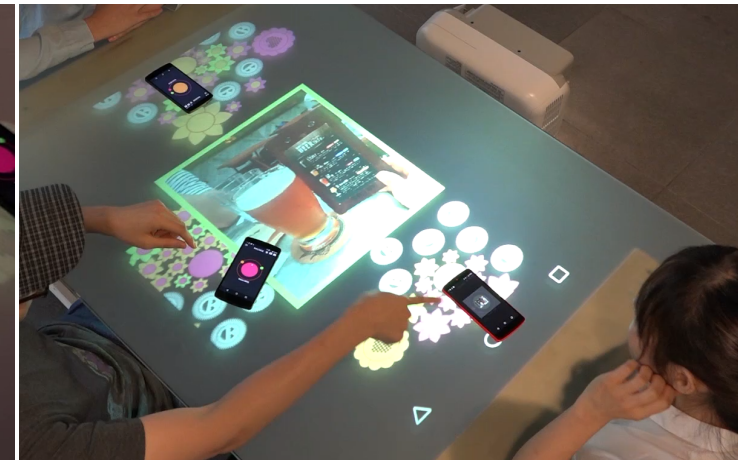
Moderating Photo Sharing



User starts random-forced sharing mode



Bee moves among users

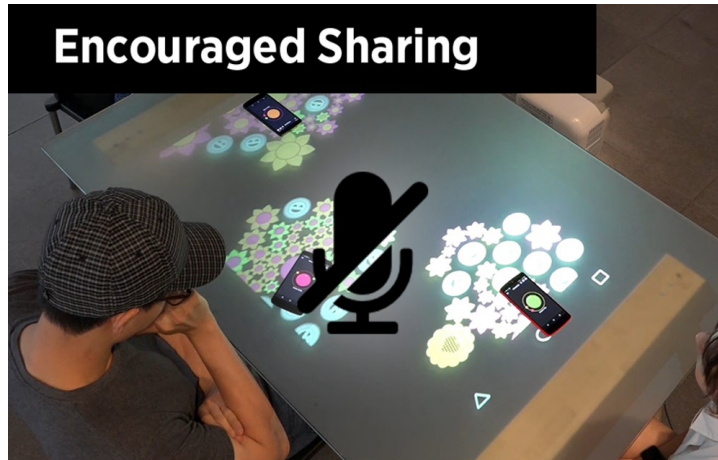


When the bee stops, the system discloses the user's photo automatically

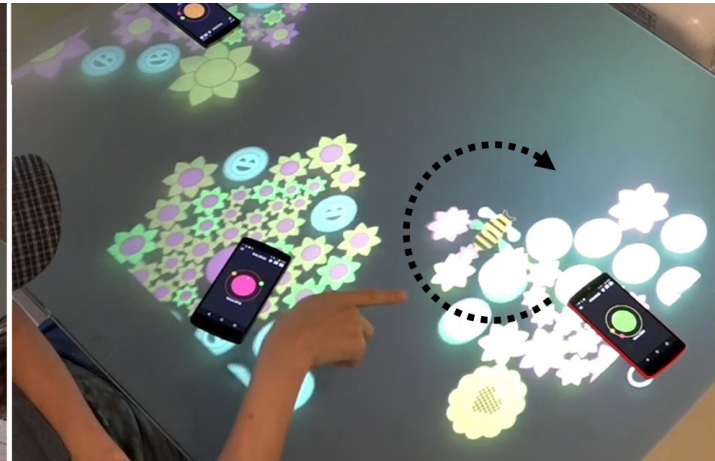
- If a user press a button in the app, the bee stops at a random user's location, and the system discloses a random photo from that user automatically
- Users cannot determine the type of photo or decide whether it will be shared

Flower-Pop's Final Design

Moderating Photo Sharing



System detects silent moments automatically



Bee flies around the least active speaker's icons



System asks if the speaker wants to share one of his/her random photos

- System detects the least active speaker, and ask if the person wants to share a photo or not
- Flower-pop facilitates conversation by monitor conversation patterns and by proactively encouraging photo sharing

Interactions

FIELD STUDY

Participants

Group Number	Group Description	Duration of Relationship as a Group
Group 1	A group of friends having a common friend (G1-M1 was a friend of G1-M2 and G1-M3, separately)	2 months
Group 2	Newly formed study group members (G2-M1 was a mentor for G2-M2 and G2-M3)	3 months
Group 3	Newly formed study group members (G3-M1 was a senior mentor of G3-M1 and G3-F1)	1 week
Group 4	Newly joined social club members (G4-M1, G4-M2, and G4-M3)	3 months
Group 5	Lab members (G5-M1 and G5-M2), including a newcomer (G5-F1)	2 months
Group 6	Social club members (G6-F1 and G6-F2), including a newcomer (G6-M1)	2 months
Group 7	Lab members (G7-M1 and G7-M2), including a newcomer (G7-F1)	1 week

- 7 groups (3 people in a group)
- Early stage of its social relationship (Avg = 1.8 month)

FIELD STUDY

Study Setup

Study Procedure

- Each participants prepared potential photos to be shared
- Each group experienced the system 2 times
 - 30 min group conversations
 - + 30 min group interview



FINDINGS & DISCUSSION

FINDINGS & DISCUSSION

Indirect Supports of Visualizations



Increased understanding of conversation patterns

“A lot of flowers with petals and stamen of the same color led me to reflect on whether I talk too much” (G6-F1, week 2)

Supported a feeling of bond development among members

“When the laughing flowers were appearing, I felt the confirmation that our conversation was going well” (Week 2)

FINDINGS & DISCUSSION

Direct Supports of Conversation Encouragement



Bee flies around the least active speaker's phone.

Direct impact on the target was limited

"I saw the bee around me, but I hesitated a bit. Since other members were speaking, I just neglected the bee"
(G1-M1, week 2)

Resistance to the semi-mandatory suggestions

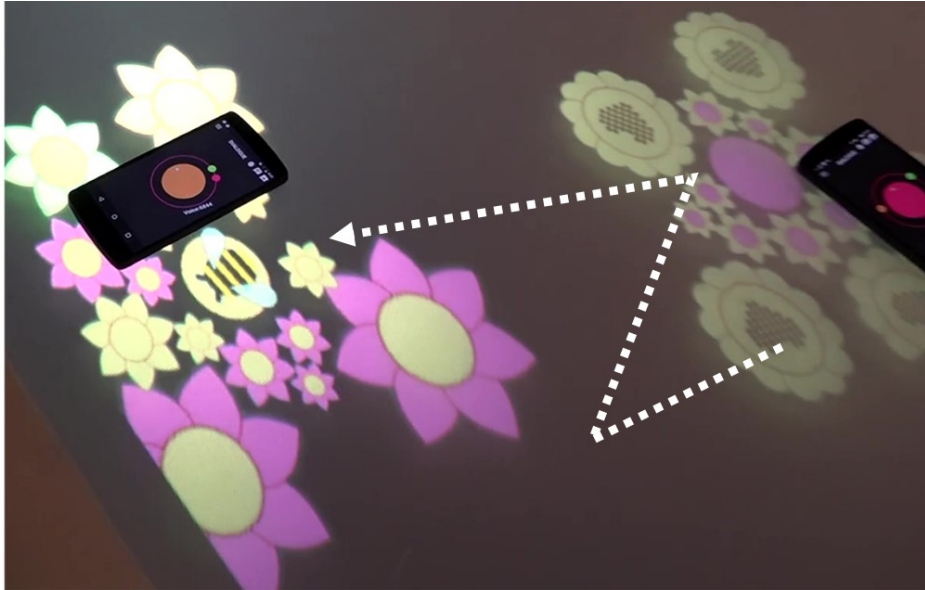
"Do we need to rely on this system?" (G4-M2, week 2)

Indirect impact via other group member was effective

"Oh, the bee appeared! This time, it seems to be your turn to speak" (G5-M1, week 2)

FINDINGS & DISCUSSION

Random-Forced Sharing: Interrupting but Accepting



*Bee lands on one of the participant,
a random photo is shared*

Positive impact

- **Acceptance** of the presenter-listener role
- **Broadened the topic** beyond social relations

Negative impact

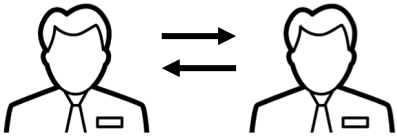
- In some cases **interrupted conversation**
- Some worried about **privacy and social face**

FINDINGS & DISCUSSION

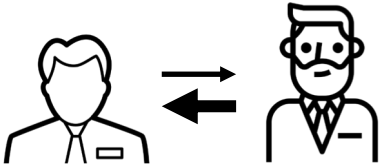
Sociocultural Influences on Casual Group Conversation with Flower-Pop



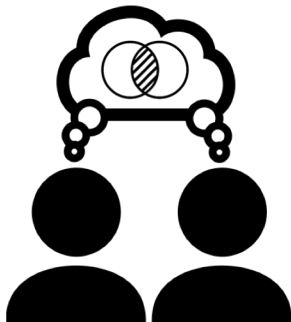
Need for **saving face** in a public space



Need for adaptive facilitation according to **social relations**



Need for understanding **group's common interests(what)** and **dynamic emotional changes(when/how)** during the conversation



Q&A

Flower-Pop

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FINDINGS

Sociocultural Influences on Casual Group Conversation with Flower-Pop

Saving Face in a Public Space

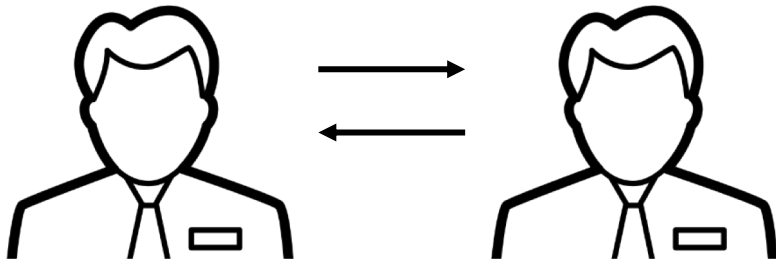


- Because the system was too visible in public, it attracted the attention of unrelated people,
- Worried that the Flower-Pop could select private or rude pictures
- Need to maintain the social faces of group members by monitoring the types of materials that are to be shared

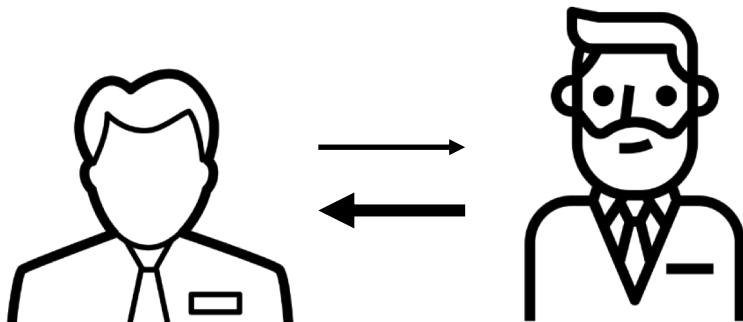
FINDINGS

Sociocultural Influences on Casual Group Conversation with Flower-Pop

Seeking Proper Photos and Chances of Speaking According to Social Relations



- In same age group, the new comer easily talk about personal stories and cut off one another's conversation.

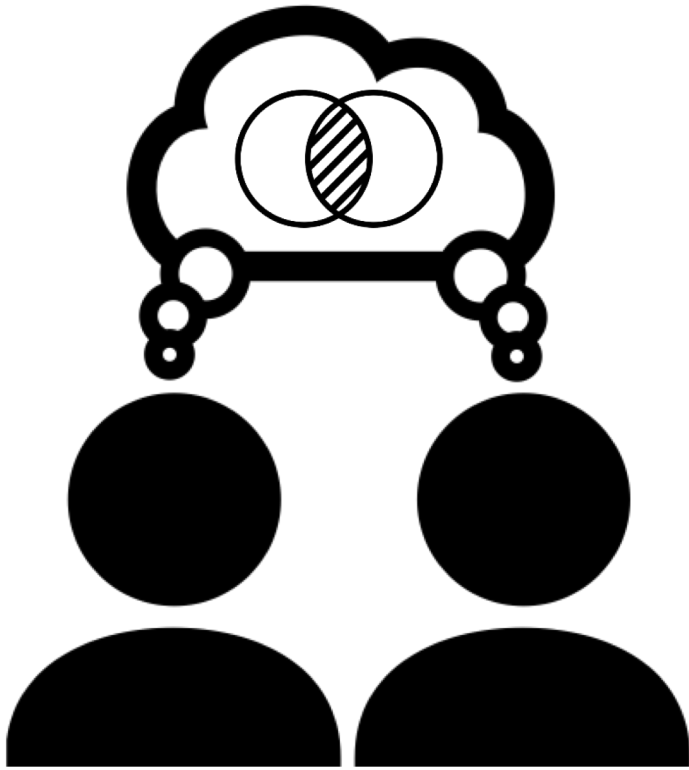


- Under a senior-junior relationship,
 - Senior participants tended to take the initiative in sharing photos and suggesting subject matters, while juniors listened attentively to the senior members.

FINDINGS

Sociocultural Influences on Casual Group Conversation with Flower-Pop

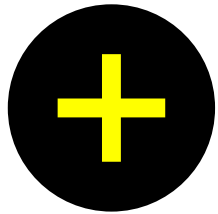
Being Conscious of Emotional Status and Levels of Attention to Ensure Group Harmony



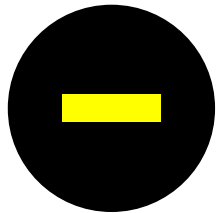
- At the beginning of the experiment, participants hesitated when deciding what type of photos should be shared because they could not figure out what would interest other members.
- As they gradually began to understand each other's interest, they were able to identify **group's common interests and suggest appropriate topics and photos.**

Use of Photo-Based Conversation Facilitation

Spontaneous Photo Sharing for Expressing Sympathy



- Used spontaneous photo sharing to relate others' narrative to their own personal experience and to show **sympathy**
- Shared different photos of participants about related topics, which **enriched the conversation**

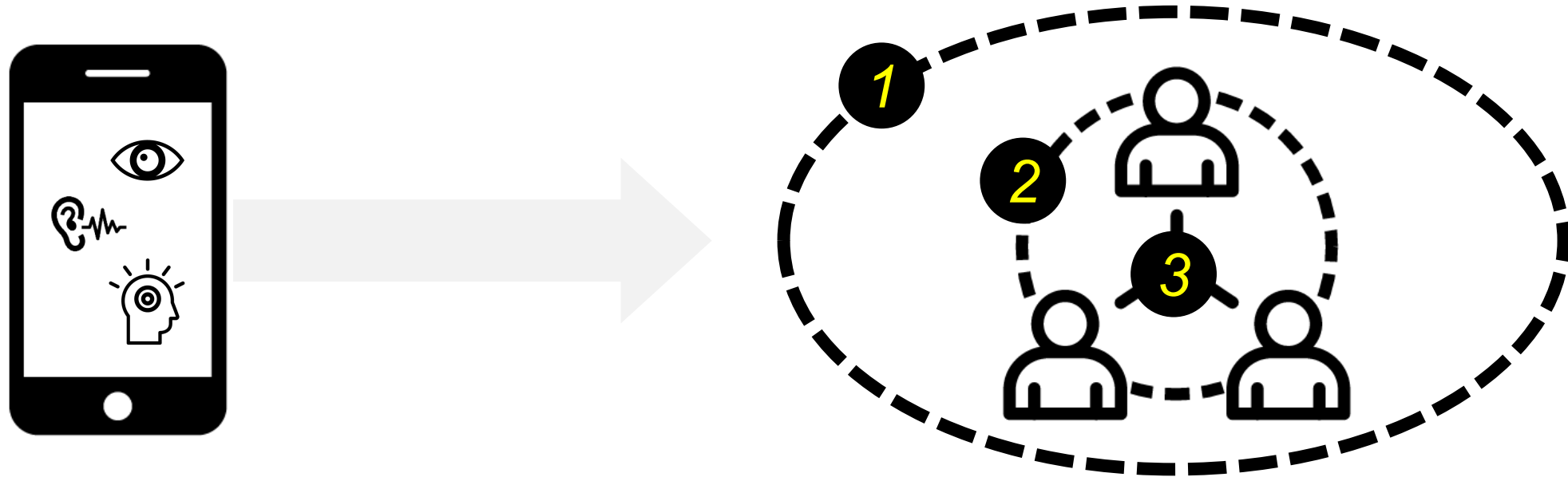


- Difficulties in spontaneously selecting photos
 - **Topics changed frequently**, thus it was difficult to catch the right timing for sharing a photo
 - *"I had a relevant photo. But the right timing was already gone to share one of my photos" (G5-M1, week 1)*

DISCUSSION

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators



- 1 *Consideration of **Environmental Characteristics***
- 2 *Consideration of **Social Relationship***
- 3 *Consideration on Audience's **Emotional Status and Interest***

DISCUSSION

Considerations of Environmental Characteristics



- People's current environments influence their social interactions.
- Participants cared about maintaining their social faces in the public space.

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators

Consideration of the Characteristics of Places

Factors to be considered

Place Type

Crowdedness

Typical Activities

Sensing GPS or WIFI access information

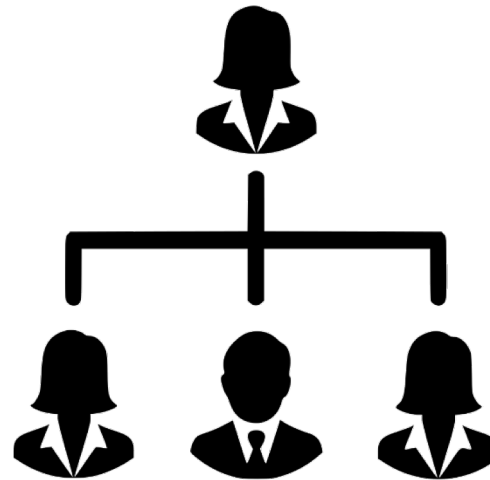
Detect the Characteristics of Places

- *Ex. In the private space, visualization is made clearer and more evident*
- *Ex. In the public space, visualization is made abstract. System carefully filter inappropriate contents of photos.*

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators

Consideration of Social Relationship



- The system should be designed to support diverse methods of social interaction depending on the type of social relationship and the level of intimacy.

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators

Consideration of Social Relationship

Factors to be considered

Type of Social Relationship
(social hierarchy)

Level of Intimacy

Ex. Use social networking services to surmise social relationships

*Ex. Diverse Facilitation Mode:
Friend-Friend /Child-Parent /With a senior*

- More careful intervention is needed in the presence of groups with age differences, a relationship with a senior etc.

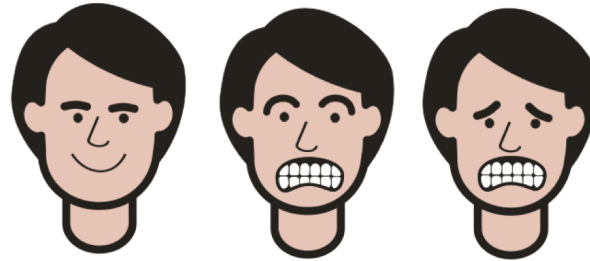
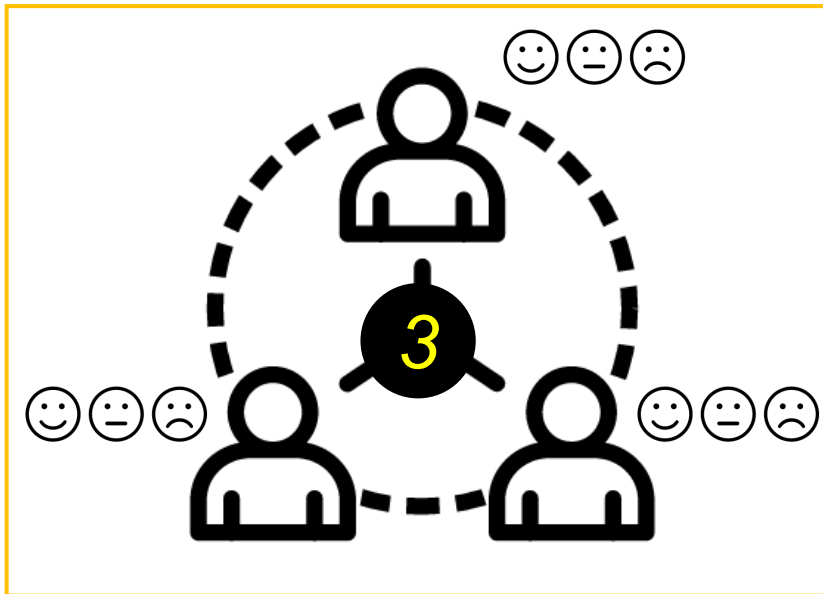
*Ex. The more intimate,
the more in-depth disclosure is possible*

- As a relationship grows, the system may start to facilitate conversation about more personal items.

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators

Consideration on Audience's Emotional Status and Interest



- In a high-context culture, the method of conversation is important.
- Speakers should be aware of how others react and what their emotional status might be.

DISCUSSION

Research Issues in Utilizing Mobile Systems as Conversation Facilitators

Consideration on Audience's Emotional Status and Interest

Factors to be considered

Verbal communication

Non-Verbal communication

Detect verbal responses
(Ex. current conversation topics)

Detect non-verbal responses
(Ex. body orientation, proxemics etc.)

*Ex. Deeper group conversation
by suggesting relevant photos*

*Ex. Enable the shared photo
to fade out when the interest of
groups has diminished*

CONCLUSIONS

CONCLUSION

Research Contribution



Sociocultural aspects of Casual Group Conversation

- Place
- Social Relation
- Emotional status



- Flower-Pop as an exemplar system as a conversation facilitator
- Field trial guides the design of mobile systems toward an intelligent conversation facilitator