

## Wallop: Designing Social Software for Co-located Social Networks

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### Abstract

*Technology is increasingly being incorporated into people's day-to-day social relationships, particularly for people whose friendships occupy the center of their social lives. In the following paper we discuss a co-located social group's tendency to integrate planning and re-experiencing around social events with tools for persistent conversations. Through a questionnaire study we found that emails and mailing lists were used as much as phone conversations to plan social activities, and that said usage was positively correlated with measures of friendship satisfaction, sense of community, and percentage of time spent socializing. In response to our observations, we designed a sharing and communication application, Wallop, to enrich the co-located social group's planning and sharing around social events. Wallop provides both communication and social awareness tools, enabling users to build conversations in the context of shared content and browse their implicit social networks. Initial responses to Wallop from a focus group and limited deployment to test users have been positive.*

### 1. Introduction

Social software, designed specifically to support people's mainstream social practices, has become a dominant class of application in both the home and the work place. However people historically glance askance at those who spend a lot of time interacting with others through the Internet. Kraut et al. (1998) found that use of computers for social interaction over time were positively correlated with depression, and Nei and Erbring (2000) found that increased use of the Internet corresponded with decreased face to face interactions. They concluded that the Internet was isolating its users, as people were losing contact with their friends, families, and communities. Rather than connecting people, it was feared that technology enabled increased volumes of weak social ties with

online strangers, at the expense of connectivity with family and friends.

Stereotypically, computer-mediated communication is used by Internet savvy people to interact with people who are geographically distributed, or to gain access to people they would not otherwise meet. For example Wellman and Potter (1999) argue that online communities provide an ideal place for people to access and develop weak social ties, from which they can draw specialized forms of support. As a consequence, they argue that people are more likely to develop online personal ties based on the exchange of information, e.g. based on shared interests, rather than based on shared social characteristics such as gender and socioeconomic class (Wellman & Gulia, 1999). Along similar lines, Kollock (1999) suggests that online community relationships tend to be oriented toward "the mobilization and command of information" (Kollock, 1999, p.224).

Alternatively, people may seek social ties online for the affiliation, support, and affirmation they could not achieve face to face (Sproull & Faraj, 1995; Farnham et al. 2002). They want to have fun, find love, and share experiences, and online they can increase the volume and diversity of people with whom they can personally connect. A number of studies support the notion that an important goal of online interactions is to develop personal connections. For example Rosson (1999) solicited people's stories about their use of the web and found that the most common stories were about making personal connections, cyber-culture, and cyber-relationships. Similarly Preece (1999), in looking at Usenet groups, found that empathy was a compelling ingredient of many online conversations. Studies of the increasing use of communication technologies in teenage populations suggest that teens actively use Instant Messaging to maintain connections to their friends because of family constraints on other forms of communication they might prefer (Grinter & Eldridge, 2003). In sum, it is generally expected that while people would prefer face-to-face interactions to computer mediated interactions, by going online people

have increased access to people they would not otherwise meet: spanning time and space, overcoming other communication limitations, and extending access to people beyond one's own social network.

Contrary to the findings of past research, we have observed anecdotally an increasing integration of online communication and sharing—in the form of email, mailing lists, online photo sharing, and blogs—with people's day to day social lives. Email, IM, and SMS appear to be an integral part of ongoing conversations, enabling increased lightweight interactions over the course of the day, and casual, last minute planning for social occasions. Broadcast forms of communication such as emails and mailing lists are an important part of planning everything from soccer games to weddings, and tools such as Evite are increasingly used to invite people to parties. Online posts of photos, mp3s, and journals are frequent venues for sharing around social experiences. Online dating is increasingly less stigmatized, and social networking tools, such as Ryze and Friendster, are increasingly popular ways to meet new people. We hear stories about how “out of touch” people feel with their social groups when they do not have access to email, as if they were no longer on the social map and had no awareness of what their friends were up to.

We argue in the present paper that contrary to past research, people are increasingly using computer mediated communication to maintain their relationships with co-located social networks of friends with whom they have **strong** social ties. Rather than compensating for deficits in their social lives, they appear to be using technology to enable increased access to and awareness of a strong community of friends.

### **1.1. New affordances in technology for social software**

Several technologies are converging to change the way that people communicate online and share media. Email has already achieved a high level of penetration in people's day to day lives, and people are increasingly using other forms of communication including multi-person interactions using mailing lists, blogs, SMS, and annotated Web albums. The increasing use of one to many, multi-person forms of communication enables a new form of social networking. Blogs allow people to communicate one-to-many in a lightweight, freeform manner, frequently with a stream-of-consciousness quality.

Cell phones provide people with continuous access to their social networks. Short, T9-keyed messages are becoming a standard part of younger people's daily

lives. Teenagers in particular use them to coordinate activities and to make continuous social contact (Grinter & Eldridge, 2003).

At the same time, digital cameras and camera-enabled cell phone encourage more lightweight media rich sharing of everyday events of life. This change is due to small digital camera sizes, mobile phone integration, and the emerging popularity of blogs. Cameras and personal photography are becoming less event-centric and more integrated into the flow of everyday life. Many people now carry cameras all the time, rather than only to special events, encouraging them to take pictures in situations that they would not previously have deemed picture worthy. We increasingly see photos of someone's lunch, the view from a car window, or a new bike. Each picture becomes a lightweight, rich manifestation of a moment easily shared through email, web pages, and blogs. After a typical gathering (for example, a party or family reunion), participants are e-mailing one another links to their respective Web-based photo albums of that event. Even in blogs that are not explicitly photoblogs, interspersing photographs into the text is becoming more prevalent.

Data storage and data access technologies change the way people interact with their data and each other. Increasingly online sites collect and analyze social metadata to provide aggregate views of e-mail, IM, pictures, videos and documents by time or people involved. These database back ends allow the content of any site to be generated automatically based on queries of the shared store and then formatted to be navigable, personalized, and compelling (Kelly, Sung & Farnham, 2002). Because the content is dynamically generated, appropriate views can easily generated per user or viewing device.

The increased penetration of social technologies such as email and digital photo sharing into people's day to day lives and the associated prevalence of social metadata create unique opportunities for providing tools for communication and sharing in social networks.

### **1.2. Research goals**

In response to the social and technological phenomena occurring around us we became interested in designing communication tools for a co-located group of friends that actively used technology as a part of their social lives. We wanted to explore how we would integrate communication and social awareness tools to meet the social goals of a friendship group. We expect that for our target users--people for whom

friends are the center of their social lives, who want to plan, share, and re-experience with co-located friends--continuous access to and awareness of one's social circle will be the killer application. Despite the recent trends in lightweight sharing with close friends and family, there is no existing software, service, or framework that supports sharing daily thoughts and photos with family, a work group, or social network well. While there have been many tools for sharing through broadcast communication (mailing lists, web pages, blogs), or one to one communications (IM, emails), there are few tools for sharing content that integrate and exploit the collective content, communication, and behavior of a known social network. Blogs tend to be focused on the individual, and the cost of these services (in time and money) makes it difficult to share photos. Photo sharing sites have minimal integration of communication and social awareness tools. Online community sites (e.g., MSN groups) tend to be used as either photo collections or discussion lists. They provide minimal tools for increasing people's awareness of each other's behavior in the shared space, or for browsing around the social space.

We were particularly interested in helping people embed their online interactions in a social context. A person's social context is an object of interest in and of itself that provides meaningful information about that person. Characteristic of a person's social network provide clues about that person's social status, interests, and attitudes. What people in a social context have to say about a person, i.e., reputation, is especially meaningful. A person might be more likely to invite a person to a party if she knew they had a mutual friend, or if she could see he actively interacted with a number of other people she knew something about.

In online situations, people commonly interact outside of any social context, which often leads to generalized feelings of distrust. Many recent applications and web sites have reintroduced a social context through reputation systems (e.g. E-bay) and by tracking usage patterns (e.g. NetScan, Smith & Fiore, 2001) that show interaction history in a social space. Ryze and Friendster are social networking tools that allow people to provide explicit lists of friends, so that users may browse around each other's social spaces and add comments and recommendations. Many people link to their friends in their blogs, providing a similar effect. These applications help people learn about each other by observing who's connected to whom, and what they have to say about each other. However these social networking tools use only explicit, user-generated links between people to help

users navigate around a social space. We expect that the greatest advantage of increasing people's awareness of each other's social context will be gained if users are not explicitly controlling the presentation of their friendship networks. That is, people will learn more about others from *how* they interact with each other than from what they *say* about how they interact with each other. Thus we wanted to explore ways to use transaction history to make inferences about how people are connected in an online social space. We hoped to provide visualization tools that would increase the social translucence (Erickson & Kellogg, 2000) of social networks—who's talking to whom, who's talking the most, who's talked the most recently, who tends to hang out together, and who's cool and who's not. By allowing people to develop an awareness of those more informal, dynamic social interactions that form around a particular person or event, we hoped to foster the maintenance and development of social relationships.

Conversations play a key role in the implicit social information people learn about each other. The presence of each person in online environments is largely comprised of his or her messages, and the presence of each group is largely comprised of what is communicated amongst its members. Although one can gain a sense of connection to others by lurking alone (Preece, 1998), a person remains invisible until he participates by committing himself to words. In other words, it is only through active participation, by committing the self to words, that the self exists at all in online situations. A person's identity is projected into the online space as much through their conversations as through their personal testimonials. Similarly, all the social information that leads to the development of community, such as identity, relationships, behavioral norms, and so forth, is transferred through text (Baym, 1998; Cherny, 1999; Figallo 1998). An online social tie occurs when one text message becomes attached to another. Thus we hoped to foster communication between people as much as possible, and expect that conversational patterns will prove to be central in determining the implicit relational ties between people.

In the first part of the following paper we test some of our assumptions about how members of a friendship group integrate technology into their social lives through a questionnaire study. The second part of the paper discusses how we designed an online communication and social awareness tool, Wallop, to support media enhanced sharing and communication in the context of a co-located social network.

## 2. Study of our target community

We had observed anecdotally in a local community of friends, comprised of urban Seattleites, that people were integrating technology into their social lives in a manner contrary to prevailing expectations. We wanted to explore more formally for this population the following questions: 1) to what extent were people communicating with geographically co-located friends through Internet technologies such as email and IM, 2) what were the primary goals of using Internet technology to communicate with co-located friends, and 3) did the use of Internet technology have a negative or positive impact on the quality of people's friendship relationships. We recruited people at a social gathering to complete the "Technology and Social Life Questionnaire" in exchange for a free drink ticket. Participants were told that we were interested in exploring how people use technology in their social lives.

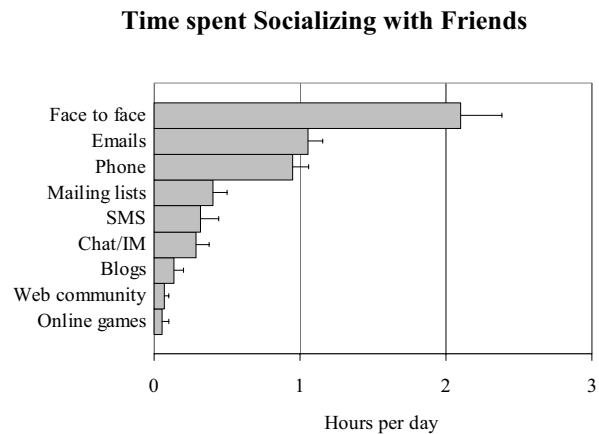
46 people, 21 men and 23 women, completed the questionnaire. On average, they were 30 years of age (SD = 4.0), and 80% had four or more years of education. They were asked to describe the kind of work they did in general terms, and most common types of responses were artist/design (10 people), professionals (9 people), and developers (5 people). 55% were single or casually dating and 44% were seriously dating or living together. All participants had some Internet experience, with 31% indicating they had intermediate experience and 62% indicating they had advanced or expert experience. 88% said they spent 6 or more hours per week on the internet for any purpose, with 50% spending more than 16 hours a week. The majority of them had either cable or DSL internet connections (84%). 43% of our participants took at least one digital picture per month, taking on average 98 pictures. Each month, they shared their digital pictures with friends 4.3 times through emails, and 1.8 times by posting them in a photo sharing site and sending a link to the site to their friends.

Despite being active Internet users, this friendship group was also very social. They indicated spending on average 43% of their free time socializing with their friends, interacting with friends 2.1 hours a day face to face. 78% of participants indicated they met their friends socially several times a week or more. On a scale of 1 to 7, where 1 = not at all and 7 = extremely so, participants reported being very satisfied with their friendship relationships (M = 5.7), that their friendship relationships were a core part of their lives (M = 5.7), and that they felt they were members of a community of people (5.2). We used a standardized Triangular

Love Scale (Sternberg, 1997)—modified to refer to friendships rather than romantic partners—to measure the general quality of our participants' relationships with their friends. Averaging across items for the subscales of relationship commitment, intensity and intimacy, again we found that they tended to report having high quality friendships, with high ratings of relationship commitment (M = 5.7), intensity (M = 5.3), and intimacy (M = 5.8).

In sum, our target friendship group tended to be 30 year old, internet-savvy college educated artists and professionals, who spent a lot of time socializing with their friends, reporting generally having high quality friendship relationships. It should be noted that by no means is this a representative community of people. Rather they represent what a community of friendship groups might look like if it had the characteristics of being both socially active and technologically enabled with high speed Internet access.

We then explored the extent to which our participants integrated technology into their day-to-day friendship relationships. We asked how many hours per day they interacted with their friends socially depending on type of interaction, and found that people spent as much time emailing their friends as they did interacting through phone conversations, up to an hour a day. See Figure 1.

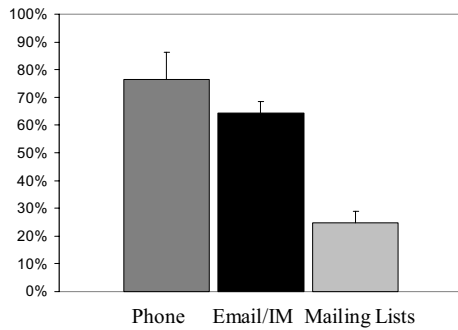


**Figure 1:** Hours per day interacting with friends socially on a typical day, depending on method of interaction. Error bars represent standard errors.

Participants reported interacting on average with 26 people socially through email, chat or IM in a typical month. They were members of 2.6 mailing lists, and interacted with about 64 people through mailing lists. In order to assess the extent to which people used Internet technologies to communicate with co-located friends, we asked participants what percentage of the people that they interacted with through phone, one-to-

one email or IM, and mailing lists they also interacted with face to face. We found that the majority of friends interacted with through emails were also interacted with face to face. See Figure 2.

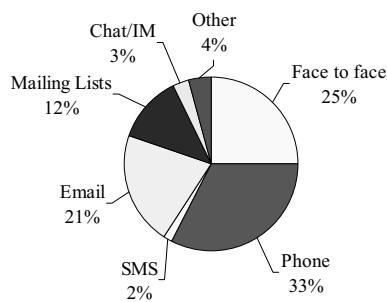
**% of People Also Interact with Face to Face**



**Figure 2:** Percentage of people participants interact with socially via phone, email/IM, and mailing lists that they also interact with face to face.

We expected that our participants would actively use emails and mailing lists particularly for planning social events, because it is easier to plan events with large numbers of people with email and mailing lists due to their broadcast nature. For example it is easier to notify thirty people about a party with an email than with thirty phone calls. We asked participants to what extent they used various forms of communication to plan social activities, and as expected found that they tended to actively use email and mailing lists. See Figure 3.

**How People Plan Social Activities**

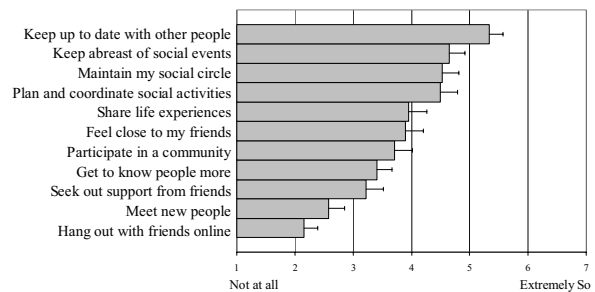


**Figure 3:** In a typical week, what percent of planning for social activities occurred through various communication methods.

People used email and mailing lists combined (33%) as much as they used phone conversations for planning social activities.

People may use Internet technologies to interact with friend to achieve a variety of social goals. We had people rate the extent to which they used Internet technologies (chat, IM, emails, blogs, web pages) for a variety of reasons. In general we found that they tended to use Internet technology to maintain their pre-existing social relationships, rather than meet new people, and to coordinate social activities rather than hang out online. See Figure 4.

**Social Purposes of Internet Use**



**Figure 4:** In general, the extent to which people use Internet technologies (chat, IM, email, blogs, web pages) for a variety of social purposes.

Do people who spend a lot of time interacting through Internet technologies spend less time interacting face to face? We found that hours spent socializing face to face had a significant positive correlation with phone conversations ( $r = .36, p < .05$ ), and a marginal nonsignificant positive correlation with the amount of time spent on one-to-one emails ( $r = .22, ns$ ). In other words, the more people were interacting through the phone and through email the *more* they were interacting face to face. Time spent with friends face to face had no relationship with time spent interacting with friends through mailing lists ( $r = -.12, ns$ ) or through chat/IM ( $r = -.03, ns$ ).

We generally found that use of email and mailing lists was positively correlated with quality of social relationships. See Table 1. People who spent more time emailing their friend had higher ratings of intimacy with their friends. This is consistent with research that shows that people are more hyperpersonal through computer-mediated interactions due to its disinhibiting effects (Walther, 1996). The more people emailed others one-to-one and through mailing lists the more they felt they were a part of a community, and the greater the percentage of their free time they spent

socializing with friends. It is interesting to note that chat/IM had negative (though nonsignificant) correlations with quality of social relationships. This highlights that email and chat/IM are probably not the same in terms of how they impact social relationships.

**Table 1:** Correlations between level of communication through various methods, and quality of social relationships.

Communication	Quality of Social Relationships					% free time socializing
	Commit	Intensity	Intimacy	Satisfaction	Community	
Face to face hours	<b>.40</b>	.01	.22	.22	.03	.15
Phone hours	.19	.17	<b>.33</b>	.28	.28	.22
Email hours	.24	.23	<b>.30</b>	.24	<b>.32</b>	<b>.31</b>
Mailing list hours	.14	.03	.05	.05	.21	.18
Chat/IM	-.22	.11	-.07	-.24	-.11	-.04
# of people email	.18	.02	.02	.25	<b>.37</b>	.27
# of mailing lists	.25	.18	.08	<b>.32</b>	<b>.43</b>	.15

In sum, in our study of a specific community of friends in Seattle we found that a socially active group with almost 100% penetration of Internet access tended to actively integrate Internet technology into their social lives, much as they actively integrate telephone technology. They used emails and mailing lists in particular to communicate primarily with people who are geographically co-located. They reported spending as much time emailing friends as they did on the phone. Those who used digital cameras used email to share photos with friends at least once a week. The primary reasons listed for emailing friends was to keep up to date with them and keep abreast of social occasions. People reported using email and mailing lists as much as phone conversations to plan their social activities. Use of technology did not appear to negatively impact the quality of people’s friendship relationships. Rather, the more they used email and mailing lists in their social lives, the greater their reported friendship intimacy, sense of community, and friendship satisfaction, and the greater the proportion of their free time they spent socializing.

It is clear that the integration of technology with one’s social life may be a positive experience, enabling friends to keep up to date with each and plan social occasions more easily than they may do so through other forms of communication. We decided to design a social application for a geographically co-located social network whose primary goals for social software are to keep up to date with each other, sharing their experiences and maintaining their social circle.

### 3. Wallop

Wallop was developed as a communication and social awareness tool that supports media enhanced sharing and communication in the context of a social

network. See Figure 5. Users add media content to Wallop through email and IM attachments, or by uploading files to blogs and galleries. Users may then build conversations around the content shared, perform searches through the shared content, and browse around the social space using a social map and through cross links to authors of any content. Wallop automatically provides custom views on the network’s collective content for each user. We make inferences about who users care about (that is, their social network) and content importance (that is, its popularity and newness) and then use our inferences to filter and sort through the content. Types of information used to make social network and importance inferences include transaction histories (who does what where), co-occurrence information (who is in the same picture), and communication patterns (who is talking to whom).



**Figure 5:** Wallop. User and her social circle in the upper left. User’s blog in the right pane.

We thought it important to design and build Wallop using real data from a geographically co-located social network. Our first step was to explore whether it was possible to integrate shared content from multiple sources, and then infer social network information from conversations built around that shared media. To do so we seeded our prototype with real shared media from a group of friends who attended the same social event. One of the researchers co-hosted a yearly Halloween party attended by about three hundred people, which generally inspired a fair number of photos shared after the event through emails and web links. We solicited the participation of 11 people with digital cameras to take pictures at the party, and posted a notice on the wall to collect releases from people at the party whose pictures were being taken. We received over 100 signatures, and in the end had over 500 photos of over 60 people. Following the party, we had several people

add metadata (e.g., who's in the photo) and comments to the photos.

We then built our first prototype around this seeded content. Currently Wallop is in a state of test deployment. Membership in Wallop is by invitation only, and at time of registration people complete a consent form that provides them with information about how their data will be used for the research project.

### 3.1. Wallop Goals

The main goal behind the design of Wallop was to embed online interactions in a social context in order to provide a compelling experience that fosters the maintenance and development of social relationships.

**3.1.1. Planning and sharing with people you care about.** We hoped to provide people with increased access to and awareness of people in their existing social networks, fostering online social interactions that supplement and facilitate offline social interactions. Through Wallop, a group of friends should be able to easily plan, and re-experience both their day-to-day lives and special social events.

**3.1.2. Serendipitous interactions.** Past research has shown that co-location is one of the strongest predictors of whether two people become friends, because it affords frequent, serendipitous interactions (See Baron & Byrne 1997 for review). People already use technology to enable both virtual serendipity, increasing the likelihood of their casually bumping into each other online through IM, email, and online journals, and real serendipity, increasing the likelihood of bumping into each other face to face through broadcasts of their intended activities and locations using SMS, IM and email. Wallop should provide a centralized point of communication and social awareness that enables people to serendipitously interact with each other, increasing their awareness of each other through rich media updates and conversations.

**3.1.3. Extending social networks.** Another important predictor of two people developing a stronger relationship is that they have common friends or move through similar social circles. Common social circles indicate a similarity of interest and lifestyle, and as discussed earlier people can infer a lot about a person's trustworthiness, status, sociability, and so forth from a person's social relationships. Thus we expect that people are more likely to initiate an interaction with a person, or respond positively to overtures of friendship from a person, when that person is from a known social circle. In face-to-face interactions, if people want to

learn more about someone before making such an overture of friendship, they often ask an intermediary friend. Wallop should provide tools that increase people's awareness of the social context around each other's communication, and what they have in common in the shared space.

**3.1.4. Improved impression formation of people and relationships.** Online technologies can facilitate the maintenance and development of relationships by helping people find and learn more about each other. In online dating situations, for example, people can filter through thousands of profiles for characteristics they care about, a task which would be quite onerous, time consuming, and in some cases socially inappropriate through face-to-face interactions. It is not generally considered socially appropriate, for example, to ask twenty people in a bar their job, income, and marital status over the course of an evening. Wallop should similarly provide tools that allow people to develop rich impressions of each other, through online journals, conversations, social context, and photos, in addition to the more standard profiles.

### 3.2. Wallop User Interface

**3.2.1. Communication Tools.** An important theme of the project is that people in a social network may "overhear" the communication that builds around sharing, so the site provides several tools for adding a communication layer to the base. These tools include blogs, the ability to add contextual messages to any Wallop content through a halo editor, and the integration of standard communication channels (email, IM).

*Blogs.* Users may provide continual updates about their activities through the blog, or online journal, feature. The blog feature allows users to add time-stamped journal entries, upload photos and mp3s, add links, and so forth. See Figure 5. A profile section allows users to provide persistent information about themselves, such as contact information, a personal statement, and links to stories and friends. The blog is the primary tool for users to control the impression they convey to others.

*Halo Editor, with Contextual Messages and Conversations.* People may add messages and labels to any content shared by others within Wallop using that object's halo editor. By adding a message to a message, users may create entire conversations in the context of a picture, a music file, or a blog. See Figure 6. The halo editor also allows people to select individual areas of interest and faces within a digital photo and uniquely identify and comment on them.

*IM and Email.* Users may send instant messages, emails, or cell phone messages to the Wallop bot, and their messages and photos are then automatically integrated with the user's blog. Similarly people may instigate IM or email messages to people from Wallop. If two people email each other and put Wallop on the cc line, this conversation is archived and made accessible to the social network. Replying to a post within the archive will cause an email to be sent as if from that user to the original participants, also with wallop on the cc line, to allow the conversation to grow and continue.



Figure 6: Contextual conversation

**3.2.2. Social Awareness Tools.** Wallop provides several tools to provide increased awareness of and access to people's social networks.

*Social map.* The focal person and his or her twenty most connected people are placed in the left pane of Wallop as a social map with navigation points. See Figure 7. Connections, or similarity, between people is determined by their level of interaction in Wallop. By clicking on the names, people can easily navigate around a social space while relevant materials about the focal person appear in the pane to the right. Although people are placed near each other depending on their similarity to each other, for simplicity we draw connections only between the focal person and the people in her map.



Figure 7: Social map

*People list.* Wallop provides a people selecting tool for finding and identifying people in the user's extended social network. See Figure 8, left pane. The tool allows for the easy use of first names and handles name collisions (several people with the same first name) by allowing the user to zoom in on any names to

show representative photos. See Figure 8, right pane. This zooming feature helps users understand who a name truly represents. People may easily add new people to the list, and in the course of adding new people they are encouraged to invite them to join Wallop.

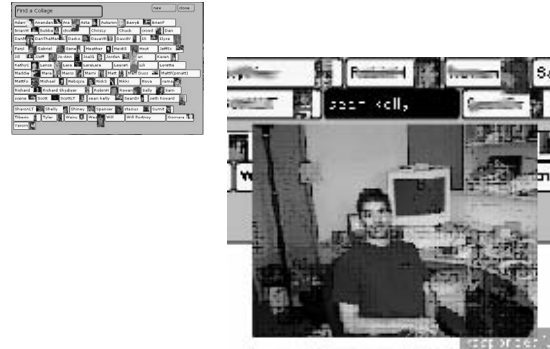


Figure 8: People Picker (left pane) shows names of people in network and their photos. Photos expand as people mouse over names (right pane).

*History.* The history view shows any recent, important pictures or messages that occurred in Wallop with regards to that person, providing the user with an awareness of both what that person is up to, and who that person interacts with. Generally, Wallop uses network similarity measures and content recency and popularity to filter for most relevant media and communication content. Clicking on a message in the history view opens its pictorial or conversational context.

*Point to Point.* Users may explore how any two people are connected to each other using the point to point feature. Point to point shows any overlapping pictures, people, or conversations between two people. See Figure 9.



Figure 9: Point to Point, shows connections in Wallop between two people, including overlapping pictures, people, conversations, etc.

### 3.3. Wallop User Testing

We recruited nine people from our target social group to participate in a focus group about Wallop and later provide feedback from an early test deployment. We first showed them the main features of the site, including their own social networks. We then had them complete a questionnaire, and finally had them discuss different aspects of the site as a group.

Responses to Wallop in the focus group were generally positive. People liked the collective, social, community nature of it. They understood the goal of Wallop, describing it as “a visual representation of your social circle” and “an interactive, asymmetric posting and messaging tool for social engagements.” One participant said “It's kind of like being at a party where you might just go up to someone and make a quick comment or interaction, then walk away, but that small level of interaction paves the way for a greater bond in the future. Same thing here, no pressure to say anything big or meaningful, you can just comment and that's it. And the pictures give you a starting point to comment on.” When asked to rate each major feature of the site, people most preferred the point to point feature which showed them how they were connected to a specific other person. During the discussion, participants said one of the features they liked the most was that while photo sharing around an event, they can find pictures of themselves they did not know were taken. They really liked that they could do a search on themselves and get messages and photos about themselves created by other people. We asked under what circumstances they would use Wallop, and several said if all their friends were using it.

When we asked people if they liked Wallop and were likely to use it, five said they really liked it, and two did not. One user indicated they thought the user interface was too complex, and another user thought all his communication needs were already being met by email and mailing lists so was unlikely to use Wallop.

The most consistent negative response was to our history view. People wanted it to be less messy and they wanted to have a better sense of why objects were placed where they were placed. Our history view originally placed people, photos, and messages randomly on the screen to emulate the look of traditional collages. We have since changed the history view to lay out items in a more traditional grid, with items ordered by time created.

Several people expressed a desire for a way to create or customize a photo album, so we have integrated a photo gallery page into the site. One person expressed concern that people he may not like

would appear near him in his network simply because they were in a picture together. He wanted a way to suppress undesirable connections.

We are currently preparing Wallop for its full deployment to about one hundred test users in our target social group so that we can better assess whether it will help users achieve their social goals of maintaining and developing their social relationships. However we have already learned several lessons from using Wallop ourselves and from observing our preliminary test users. We have found that it is very important to provide people with indications of what is new in the space. Because the conversations are very contextual, it is easy for them to get “lost”. Thus we provide visual indicators of new content on people, messages and photos, and we order the content in the history based on time.

In developing our similarity measures between people, we have found that conversations provide a better approximation of who knows who than does co-occurrence in photos. We have found for some new users that their social network is empty upon registration, which they dislike. Thus we link them to the person that invited them into the space, so they are connected to at least that one person. Designing and building Wallop using pre-existing shared content from a real social network has proven to be invaluable. Given that we are trying to customize the content for users depending on how people actually interact with each other, it has been important to explore how we can infer social connections based on the metadata found in shared media and the conversations that are built around that media.

## 4. Conclusions

Geographically co-located friends and family need tools for computer-mediated communication and sharing as much as people who interact across long distances. We designed Wallop, a social application, with the goal of enabling people to maintain and extend their day-to-day social circles. Wallop provides communication and sharing tools to help people share their experiences, and social awareness tools to enable people to browse for shared content in their social space, serendipitously bump into each other, develop rich impressions of each other, and extend their social networks. We provide tools for allowing people to build conversations in the context of shared media on the assumption that people learn more about each other from “overhearing” such conversations than through more controlled self-presentations such as found in blogs. We infer social network information from the

conversational patterns in Wallop, to help people develop an awareness of those more informal, dynamic social interactions that form around a particular person or event.

While people will always prefer face-to-face interactions to computer-mediated interactions, online social spaces have promising features that foster the maintenance and development of social relationships. We found through a questionnaire study of a socially active friendship group that emails and mailing lists are being used to help people keep up to date with each other and coordinate social activities. People are sharing life experiences through the exchange of digital photos, and Internet technology is becoming as integrated into people's day to day social lives as telephones. More importantly, rather than finding that use of social software isolated people from each other, we found that it was positively correlated with measures of friendship satisfaction, sense of community, and percentage of time spent socializing. As access to the Internet continues to increase its penetration into the general population and sharing media becomes easier and cheaper, tools for supporting geographically co-located social networks will become increasingly central to people's social lives.

## 5. References

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