Supporting Awareness and “Sense of Community” through Situated Displays

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Structure...

• Background/Motivation
• Three Settings
  — Lancaster University
    • Hermes Office Door Displays
    • Hermes photo display
  — SPAM
  — Rural Village (North of England)
    • Wray Photo Display
• Questions

Background/Motivation

• Basic research area
  — HCI, CSCW (Computer Supported Cooperative Work) and Groupware Systems
  — "How collaborative activities and their coordination can be supported by means of computer systems.” (Grudin, 1988)
  — Note “Work” in its widest sense
  — Coordinating activities through shared awareness in an office environment...
  — Maintaining “sense of community” in a rural village...
• Technology Focus
  — Situated display technologies (can be quite mundane!)
• Design Approach
  — Iterative, UCD/PD (User Centered Design including Participatory Design)
  — “Start with the users, and to work from there” (Norman, 1988)
  — Use of Cultural and Technology Probes
  — Inspire design ideas, Engage with the user
• Evaluation Approach
  — Longitudinal study of deployed systems (cf Lab studies)
  — Deployment based research...
  — Insights into adoption and appropriation

Examples of Situated Displays

Situatedness...

O'Hara, (2002): “In recent years, more and more information is being presented on dedicated digital displays situated at particular locations within our environment. At their most basic, digital display technologies allow information to be more easily updated dynamically and remotely. However, these new kinds of interaction technologies also allow people to use these situated displays in novel ways both as for the individual’s purposes and in the support of group work.”

Harrison and Dourish (1996) on Place: “a space which is invested with understandings of behavioural appropriateness, cultural expectations, and so forth.” Encompasses not only the physical aspects of the environment and the constraints these impose on behaviour, but also what actions and patterns of behavior are expected there and the particular routines that have developed there over time.

Awareness and Community...

• Portholes (Dourish, 1992)
  — Shared media space


Awareness involves knowing who is “around”, what activities are occurring, who is talking with whom; it provides a view of one another in the daily work environments...

...the sense of whether people were around and seeing my friends; knowing who’s around; feeling some connection to folks at [the remote site] (sharing a “community” with them)
McMillan & Chavis (1986) define Sense of Community as:
- “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together.”

- 4 elements according to the McMillan & Chavis theory:
  - Membership
  - Influence
  - Integration and fulfillment of needs
  - Shared emotional connection
    - The “definitive element for true community” includes shared history (or at least identification with the history).

Mynatt et al. (1998) identify three simple ‘defining features’ of community, essential to design.
- Boundaries
- Relationships
- Change

Nichols, (2002): “Office doors are more than entrances to rooms, they are entrances to a person’s time and attention. People can mediate access to themselves by choosing whether to leave their door open or closed when they are in their office. Doors also serve as a medium for communication, where people can broadcast individual messages to passersby, or accept messages from others who stopped by when the door was closed.”

Staff often away on conference trips, lecturing, do not keep regular office hours, etc.

Q: “A display associated with my university society would be a good idea...”
  — No negative responses...
  — “I’m a member of the climbing club. Would definitely put pics of me climbing stuff on it”...

- Cultural Probes given to members of the club followed by design workshop
  — Where to place display?
Case Study 2:

Situated displays to support staff across geographically remote offices

The Setting...

- A residential hostel + supported bedsits for former psychiatric patients
  - Encouraging everyday living skills
  - Inappropriateness of current methods
    - Interviews (police...)
    - Questionnaires (claiming social security...)
  - Need to establish trust
- Typically ethnographic methods have been deployed in commercial and industrial settings
- Methods for identifying user needs in sensitive settings are not well developed
- Obdurate problems that make direct observation intrusive, disruptive and inappropriate

Research Questions

- What are the ‘everyday rhythms’, what are the problems, can technology help?
- What technologies do they already use that we could leverage, how were these used, were they used to support coordination?
- Specific issues to do with the availability and use of existing technologies and their affordances
  - E.g. use of mobile phones

Cultural Probes: from Inspiration to Information

- Direct observation requires supplementation
- Cultural Probes - Gaver, Dunne & Pacenti - Presence project - ‘inspirational’ use
  - “They may seem whimsical, but it would be a mistake to dismiss them on that ground; for unless we start to respect the full range of values that make us human, the technologies we build are likely to be dull and uninteresting at best, and de-humanising at worst.” Gaver 2001.
- Adapting Cultural Probes to open up communication channels and foster an ongoing dialogue with the members of our user groups
- Generate key insights into their unique needs.

Cultural Probe Pack

- A disposable camera, photo album, visitors book, scrapbook, post-it notes, pens, pencils and crayons, a set of postcards addressed to the researcher, and a map.
- Not explicitly ‘designed’ - present - modified over time
- Instructions:
  These items are Cultural Probes - but don’t worry - they’re just a way for us to find out more about you, your everyday life, what you think and feel. We’d like you to use them to tell us about yourself - and below are a few ideas you might want to think about. Ignore these if you like - nothing is compulsory - do as much or as little as you like. We hope its fun. I’ll come back to collect them in about a week

Abiding Concerns and Rhythms

- Major preoccupations —
  - medication;
  - safety and security;
  - communication and coordination of activities
  - Sense of community between residents and between residents and staff.
- Rhythms readily perceived - visiting rounds, movement of residents into, around and out of the site at various times of day, medication delivery, staff meetings...
- Communication resources overloaded in mornings...
Initial Design Workshop

• Demonstrated Hermes...
  – Tech Prop
• Discussed problems, scenarios
  – Resident missing a train
  – Staff member delayed in hospital
• Staff felt that similar messaging system would be useful
  – Reduce burden on phone
  – Lightweight asynchronous comms
• Design Constraints
  • SMS based
  • Touchscreen
  • Privacy reqmnts...

Paper Prototyping...

• Another approach that we could have used at this point is that of “paper prototyping”.
• This could have literally involved handing out bits of paper and asking participants to sketch what they think the interface to their messaging system should look like
  – This would have provided an idea for how large text should have appeared on the screen etc.
  – We could then have acted out scenarios using the paper prototypes created, e.g. What happens if a resident enters the office if a message with sensitive content is showing on the screen.

The SPAM Solution...

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The SPAM Solution...

http://www.equator.ac.uk/index.php/articles/621

Community Psychiatric Nurses etc.

Residents  Remote Staff

E-mail  SPAM  Phone

One member of staff in office at supported Bedsoles/Flats

Multiple members of staff in office at residential hostel

Settling in...

• Initial comments
  – “I think people at first thought it was going to be really complicated but it couldn’t be easier … we find it extraordinarily useful.”
  – “...and we had a good thing the other night because there was a crisis down at XXXX and of course the phone was tied up and we were waiting for people to phone back so they were just letting me know what was happening down the road…”
• 2nd Design Workshop
  – Channel Issues
    • “Blocking” feature, Ack feature, Automatic Message Forwarding
    – Visibility of messages

Settling in...

– Message categories
– Use as Confirmation
  • Has fax, email got through?
  • Has x left yet?
– General coordination between sites...
  • e.g. Ordering food!
  • Use to signify delays/ need for action,
    • Related to phone use, usually requests for phone to become free.
    • “Please ring car won’t start so cannot take ph and um to us barbara”.
  – Use of Mobile
    • “Stuck in snow – going to be v. later”
  – Awareness

Adoption and Appropriation

• The SPAM unit acted as a Technology Probe (Hutchinson, 2003) enabling us to learn further about the setting and the way in which such a technology intervention might be adopted and appropriated in such a setting over time...

  "how do u turn a duck in2 a soul singer - put it in the microwave until its bill withers"

• Longitudinal studies are typically required in order to learn about such issues...


Design of a Communal Display for the Residential Facility

• Considered design of a display to be placed in the communal area of the 24hr residential facility...
  − Informed by...
    − observing notice board at residential facility
    − Much DTP produced material, e.g. Staff Rotas
  − Discussions with staff
    Some staff felt that they would like residents to ‘know’ them more - but noted that there had been examples of damage to personal photos/pictures that had been brought in.
    Encouraging residents to go on trips, e.g. Day trips to Blackpool.
    − Idea that residents/staff would take pictures and send to display
  − Design Workshop
    - 2004, talked through scenarios, showed photo display etc.

Architecture...

• Data stored locally
• Travel to collect logs
• Alternatives
• Implications ??...

Recall Broad Categories of use...

• Use as Confirmation
  − Has Fax, email got through?
  − Has x left yet?
• General coordination between sites...
  − e.g. Ordering food!
• Use to signify delays/need for help,
  − Related to phone use, usually requests for phone to become free.
    − "please ring car wont start so cannot take ph and sm to cc barbar".
• Coordination with mobile users
  − e.g. "Pizza & and chips are ready come on in :)
• Remote requests
  − e.g. request to test the fire alarm
• Some jokes and general chit-chat etc.

Issues ??

• HERMES and SPAM deal ostensibly with Messages – But typically content sent to a situated display will share many of the same issues.

Who can send messages to the display and should access to mechanisms for sending messages be shared?

• In Hermes, ostensibly the owner but the ‘leave message at door’ facility did effectively provide shared access.
  − Inspired some interesting use cases/appropriation.
• Implications for system – is the identity of the sender obvious from the situation?
• In SPAM, access for sending messages was designed to be shared - any member of staff located in the staff room (or via mobile phone) could send.
  − Consequently, some messages were signed.
  − But, control mechanisms were introduced, e.g. blocking feature.
How public/private is the place where the messages will be displayed and who are the potential receivers of this information (1)?

- This leads on to questions of how salient messages should appear in the public setting.
  - With Hermes the overall design of the screen was such that it would not be overly salient to passers by who were not visiting a particular office.
  - With SPAM the font size used was specially chosen so that a resident entering a staff room unannounced would not be able to read a message on the screen.

How public/private is the place where the messages will be displayed and who are the potential receivers of this information (2)?

- Also raises issues of control:
  - whether a received message should be displayed automatically (as in Hermes) or
  - whether some action (e.g. a mouse click) should be required before the message is displayed (as in SPAM).
- In SPAM, the required mouse click on the ‘READ’ button acted as a confirmation to the message sender
  - implications of providing such a confirmation feature depend strongly on the potential audience, the level of disruption that can be tolerated and the dependability requirements of the particular workplace/setting.

For the creation of messages, what level of expressivity should be supported?

- In Hermes owner had a reasonable choice
  - from highly expressive scribbled messages to prescribed (and very quick to select) short messages,
  - e.g. “Gone for Coffee”.
- In SPAM messages where textual
  - but some members of staff did ask for a range of graphical emoticons to be supported.
- The effort required by the user is also related to this issue of expressivity.
- The level of expressivity supported also relates to the extent to which users can direct a message to a particular individual or group and the extent to which they can control the accuracy of the information.
  - crucial if notions of plausible deniability are to be supported.

Other Issues??

- What would be issues if a version of Hermes/SPAM was tailored for use in the home as a supplement to SMS/Phone/IM etc. ??

The Wray Photo Display: Supporting Sense of Community in a Rural Village...

The Wray Photo Display...

http://wrayvillage.blogspot.com/

The Scarecrow festival...

Early Investigations...

Initial Design Workshop...

- Venue: Village Pub, May '06
- Collected Probe packs
- Described Hermes photo display and idea of it potentially supporting notions of community
  - Used b&w pictures in pub to highlight potential use of a photo display for supporting notions of community
- Discussed plan to deploy a simple photo display (technology probe) for 2 weeks
- Discussed some early requirements
  - Keen to have the current view of what is showing on the photo display viewable on the web...

Installing in the Village Hall - Aug ‘06

Settling in... Produce Fair, Aug ‘06

...It would also be good to see some of the old photos of days gone by
...would be good to see some of the historical pictures of the village...

...and a delight for those who were born here and want to go down memory lane...

...I would be interested in having one at the tea rooms

...it will aid communication at all levels from bus timetables to social events and keep everyone informed of all aspects of village life

... Can it be extended into an on screen version of Wrangly Mail or village notice board?

**Supporting New Categories...**

- Supporting User (Community) Generated Content...
- Moderation/ownership of categories

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"Old Photos"...

Hermes Photo Display

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload</td>
<td>[Image]</td>
</tr>
<tr>
<td>Delete</td>
<td>[Image]</td>
</tr>
<tr>
<td>Save</td>
<td>[Image]</td>
</tr>
</tbody>
</table>

Publishing Status: Draft | Published


text. This text is user-generated content and ownership of the category is with the user.

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In contributing a category, you agree not to contribute any content that would be inappropriate for appearing in a community setting. By contributing a category, you agree to the terms of use and privacy policy as applicable.
A move to a new location...

- Early Oct 2006 Photo Display moved to Post Office.
- Shop owner and assistant described how popular the system had been with both locals and visitors
  - Reported that one visitor had spent 20 mins exploring photos.
- Discussed new categories
  - Owner wanted to add '60/70s' category...

“Wray Photos not quite so old”...

...photos found of relatives we never thought we’d see.

“Wray Flood”...

“Funny Videos and Photos”...

Photo Display User – 3rd November, 2007 at 12:28pm
Jim and Ada Smith. Licencees of George and Dragon. 1957-1977
E-mail sent to Chris from one of the villagers (computer club member) - May 2007

"I'm sorry, but I won't be around on Thursday to go to that meeting in the Institute... but I DO have an idea - maybe you could pass it on for me.

"I was wondering if we couldn't make photographs of Wray and surroundings available as postcards for visitors to send. The ones for sale in the post office aren’t very inspiring, and I’m sure the locals could do better! I know WE have lots of nice pictures of the village - and I’m always looking for cards myself to send to my family in the States.

"It seems to me they would have gone like hotcakes during Scarecrow Week, for example. Maybe they could even be free. I don't know anything about HOW to do it, but it would be nice, either as e-cards or as real, printable paper cards.

"Anyway, if it's impossible, at least I won't have to be there to hear the hoots of laughter!"

2:08 PM Chris: keep thinking about that email from xxxxx and how she thought you would laugh at her and how brilliant an idea it is seems to me like most of the villagers feel the same the hardest bit is getting them to open their mouths at the right time and share their thoughts

Usage Logs...

- Village Events, • 578 across 8 subcategories
- Scarecrows, • 56 across 4 subcategories
- Wray Flood • 27
- Current Photos • 141 across 6 subcategories
- Old Photos • 191
- Funnies • 49
- Sticky Fingers craft workshop • 11

“good way to find out what is going on in the village, dates and times etc.”

“can it be extended into an onscreen version of Wrayly Mail or village notice board”

“what about selling advertising space to villagers”

“I would like the noticeboard to showcase local businesses”
Lessons

• Residents relate to real artefacts.
• Use a local enthusiast as a champion.
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• Residents relate to real artefacts.
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• Be flexible.
• Manage expectations.

Summary

• Prototypes deployed in the wild for a prolonged period.
• Participants benefit from exposure to technology.
• Researchers learn about the environment and the technology.

Pattern of Deployment based Research...

Thank you