Location Disclosure to Social Relations: Why, When, & What People Want to Share

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About the paper

- Published in:
  - CHI2005, proceedings of ACM SIGCHI conference on Human factors in computing systems
- Authors:
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- Cited by 247 publications

Problem statement

- What are the factors used to determine whether to disclose location?

Methodology: three phases study

- Invite 16 non-technical participants
- Phase 1: investigate participants' social networks and their thought about location-enhanced computing
- Phase 2: respond to hypothetical requests
- Phase 3: interview & reflect on their experience

Phase 1

- Goal: be familiar with participants' background, understand their social network structure
- Tool: demographic questionnaire (Westin/Harris Privacy Segmentation Model)
  - Westin's studies
    - Over 30 privacy surveys and indexes(Kumaraguru, CMU-ISRI-5-138, 2005)
  - Generate privacy classification of participants
    - Fundamentalist
      - High privacy concern
    - Pragmatist
      - Middle privacy attitude
    - Unconcerned
      - Little privacy concern

About participants

- 8 male, 8 female, age from 24-64
- Left home daily, use cell phone regularly
- 11 full-time, 1 training, 3 part-time, 1 homemaker
- Occupation: social worker, librarian, financial advisor, teacher, architect, estate planner, etc.
- 14 had a spouse or significant other, 4 had children
- No technical background
- Privacy classification
  - Fundamentalist   12%
  - Pragmatist   69%
  - Unconcerned   19%

From http://chargerchant.wordpress.com

Phase 1

- Results:
  - Create a "buddy list" (up to 17 names)
    - spouse/significant other
    - family members * 2
    - manager
    - co-workers * 2
    - 11 others

Phase 2

- Tool: use Experience Sampling Method to capture responses
- Method:
  - hypothetical requests from buddy list
  - 10 randomly questionnaires per day, each has several questions, 2-3 min
  - Context:
    - Where? What? With whom?
    - What would you disclose about your location to "Jim"?
  - Nightly voicemail diary
    - Report atypical activity
    - E.g.

Two types of requests

- Single request
  - One-at-a-time request

- Standing request
  - People on buddy list will be notified whenever the participant arrives at a certain location
 - E.g.

Responses

- For standing request
  - Accept or reject
- For single request
  - Something:
    - Exact address, cross streets, neighborhood, generic place, zip code, city, state, country
  - Rejection:
    - System busy, I'm busy, request denied, a lie
- Followed by asking reason

Phase 3

- Goal: reflected on experience
  - Attitudes about location-enhanced computing & disclosing location
- Method:
  - One-on-one interview
  - Edit exercises from Phase 1
  - Complete a modified privacy classification survey(based on Ackerman's survey)

How comfortable to provide?
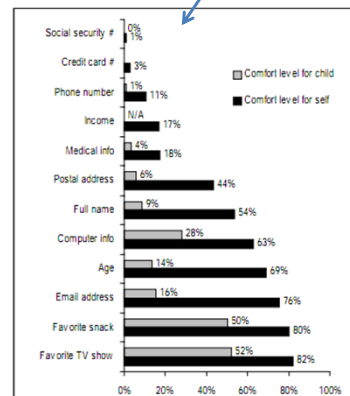
Key findings

- Which factors will affect?
  - Who is requesting?
  - Why requesting?
  - What details will be useful?
- People respond most useful details or nothing at all

Results

- Most of the time, willing to disclose something
  - 77% of 3798 requests
    - Specific location   77%
    - Less specific (neighborhood, city, zip)   19%
    - Vague   5%

- Vague location is not commonly used, when useful
  - E.g.

More than 100%?

Relationship of Requester to Participant

- Strongest factor: who
  - Significant others/spouses   93%
    - 7% rejections: 75% are "busy", also popular to others
  - Friends   85%
  - Family   83%
  - Co-workers   53%
  - Managers   34%
- Current feeling to requester

Where Requester Lived Relative to Participant

Table 2. *What* participants chose to disclose based on how near the requester lived to them.

In proximity to participant, requester lives …	Address, Place name, or X-streets	Neighbor-hood, City, or ZIP Code	State or Country
in same city	86%	11%	3%
in same state, but not city	80%	19%	1%
out-of-state	55%	28%	17%

Table 3. *How* participants chose to respond when they rejected requests, based on how near the requester lived to them.

In proximity to participant, requester lives …	I am busy	System busy	Request denied
in same city	78%	12%	10%
in same state, but not city	37%	13%	50%
out-of-state	41%	5%	54%

WHY?

Locations

- half the time at home, a quarter of the time at work, the rest of the time various

Where participants reported they were when they completed questionnaires

park, 2% in transit, 1% movie theatre, 0.40%
restaurant, 4%
store, 4%
other, 12%
home, 49%
work, 27%
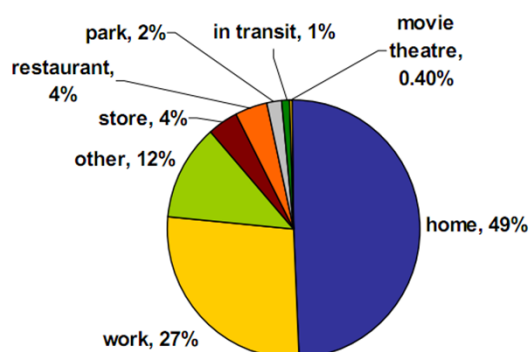
Privacy classification

- Dangerous in generalizing beyond business environment
  - Give address to business vs. to friends
- Unconcerned –58% Disclosure
- Pragmatist –88% Disclosure
- Fundamentalist –70% Disclosure

DECISION PROCESS

- 1) Who is making the request (and how do I feel about that person right now)?
- 2) Why does the requester need to know?
- 3) What would be most useful to the requester?
- 4) Am I willing to disclose that?

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Conclusions

- Participants want to disclose what they think would be useful to the requester or deny the request
- Privacy classification is not a good predictor
- From results, reflect on decision process

Personal opinions

- Good example of conducting survey, sampling
  - Different occupations, ages, backgrounds, etc.
- Current feelings work a lot, uncertainty
- Could have more participants
- 6 years later, what is happening
  - SNS, smart phone with GPS, 3G
  - Location is becoming less private
  - People are more willing to disclose than before, sometimes reluctantly