Reducing the Stress of Coordination: Sharing Travel Time Information Between Contacts on Mobile Phones

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Why do we share location?

(Bentley and Metcalf ’08)

• To know when someone will arrive
  – Partners arriving home
  – Kids on the way from school
  – Meeting friends at a restaurant / movie / etc.

• To know when I’ll arrive somewhere
  – On my way to meet someone else, when will I get there?
  – To know if I’ll be late

• Availability
  – Are they in a place where I can call/message them now
Previous Attempts at Location Sharing

Precise location

Always on

On demand

Abstract location

Later apps like Latitude, Find My Friends

(Smith et al., 2005)

Later – apps like Foursquare

From www.loopt.com

From www.helio.com

(Raento et al., 2005)

(Marmasse et al., 2004)

(Bentley et al., 2007)

(Raento et al., 2005)
Design Goals

• Privacy Preserving
  - Does not share absolute location
  - Sharing only to one other person at a time
  - Reciprocal and not always-on

• Effortless
  - Shares the data that’s actually useful to someone trying to meet up
  - Does not need interaction by person in transit
  - One touch interaction
Pair App

Time Away Request Button

Time-Away Bar (only visible after pressing button)
Study

• 20 Diverse Participants
  – 10 main participants (21-52, 5M/5F)
  – Recruited a friend to use system with (often partner)

• Field Study
  – 21 days of use in daily lives
  – 2x/week voicemail diaries
  – App instrumentation
  – No use of system was required and time-away feature was only briefly mentioned

• Final Interview about use

• Summer of 2014
• California, USA
Use of Location Feature

- Average 12 times in 21 days (median 9, s.d. 17)
- Also sent average of 78 text messages to pair and 2.4 photos
How it was Used: Coordinating Meeting Up

Meeting for dinner, movies, coming back from across the bay

• P1: “You don’t have to interrupt them, like ‘Oh, how far are you,’ or get impatient. Just look.”

• P7: “She was coming from her office, to come pick up the dog, and I was in a hurry because I had a meeting and I needed her to come. [We used] it that way so I can see how close she was to me.”

• P4: “I couldn’t get a hold of her, ‘Where are you? Where are you?’ Trying to figure out what we’re going to do for the night, try and figure out how far she is, I was like, oh yeah. I went into the app, said, ‘Where are you?’ But then I was able to pull up her ETA and … was like, okay she’s actually on her way. I think she was on her phone talking to somebody, she didn’t want to talk to her husband.”
Preparing dinner on time for a loved one or meeting kids for playtime – Reduced stress of knowing arrival time

• P3: “Yeah, I was very accurate with that way. The timing meant everything because it meant hot meals ... Imagine if I cooked the meal at 30 minutes before ... fried food cold is gross.”

• Before the system she “would kind of be off with the time a little bit, sometimes he’d get home sooner then I’m like, ‘I’m still cooking. You aren’t supposed to be here. You’re supposed to come home 30 minutes later.’”

• P4: “I was just on the [train], we were messaging back and forth. Instead of asking me the question she just popped it [the time-away] up. She’s like, ‘Oh you’re here?’ ... It was really nice to be able to connect that way. ... It just seems more fluid than a text.”
**Thoughts on Privacy**

Better than absolute location, but still can be intrusive

- **P3:** “made me feel comfortable, more than [a precise] location ... Knowing a precise location would be good but then I think it’d be kind of be creepy because I wouldn’t want someone to know like exactly where I was. That’s a little weird.”

- **P6:** Was driving past girlfriend’s house without stopping in. She happened to check location at that time and saw he was nearby. Led to “discussion” later. “Sometimes I feel it might be knowing too much information.” (yet used it more than any other participant)
Take Aways

**Novel set of features that made this app successful:**
- Request-based pull from person who wanted to know information
- Abstraction was useful (and privacy-preserving) information (i.e. Time Away by a variety of means of transit)
- Instant reciprocity of seeing a friend’s time away when they request yours reduced misuse
- Overall reduced stress when meeting up

**Future Directions**
- Time away for families/groups getting together at a location
- In-home ambient displays (similar to Whereabouts Clock, but with ETA)
Questions...

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Time-Away Bar (only visible after pressing button)