Peek: Context Sharing on Request with Notifications

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Abstract
Ever wondered if it was a good time to call your spouse, child, or friend? Do you sometimes just want to know if they are on their way to meet you? With Peek you can request the activity state (e.g. walking, in-vehicle, at-rest) and location of a phone when needed. Context is sent back automatically to people on the phone owner's pre-approved Peek contact list. The person being peeked at receives a notification that provides awareness of who peeked at them and when.

Author Keywords
Context sharing; awareness; activity recognition; mobile presence;

ACM Classification Keywords
H.5.3. Group and Organization Interfaces: Asynchronous interaction.

Peek
Ever wanted to call your spouse, but not if he or she is driving? The Peek application allows people to request the activity state of a phone (and by extension its owner) when needed. This is in contrast to many other mobile location sharing systems (e.g. Google Latitude, Four Square, Glympse) that rely on someone explicitly sharing mobile location for a period of time or checking in. Using Peek you can request mobile context

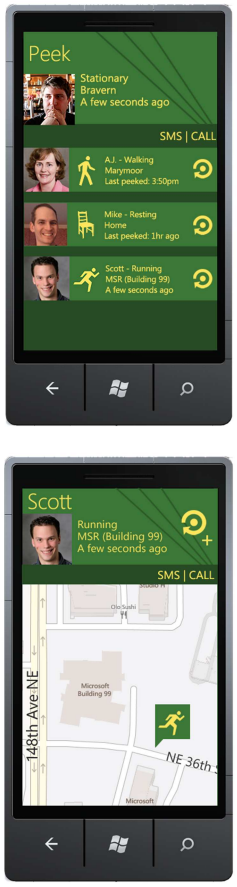

Figure 1. Peek main page shows your status and your contacts. (Top). Clicking on Scott shows his activity state and current location. Scott's phone receives a notification that it has been peeked at.

information helping, for example, to learn if it is a good time to call your spouse. Each peek causes a phone notification, alerting your spouse that you have requested information about their mobile context. These alerts and the alert history in Peek provide awareness of what context information has been shared and to whom.

Most closely related to Peek is the research of Bentley and Metcalf on continuously sharing motion status ("moving, "not moving") of a phone with close family and friends [2] and CoupleVibe, a system by Bales et al. that automatically shared location information using vibrotacile cues between couples [1]. Both systems were deployed in field trials and participants valued the additional awareness provided by continuously shared contextual information. The Reno location system, studied by Iachello et al. [3], one of many location sharing systems and prototypes, included location requests that had to be explicitly approved and an Instant Reply Feature that automatically shared the location. Their 11 participants in two family groups rarely used the Instant Reply Feature.

Informed by these studies, we built Peek to focus on sharing physical activity state (e.g. walking, in-vehicle, at-rest) and to share data automatically after a peek request rather than continuously because we believe this reduce privacy risks. Based on the findings of Iachello et al. [3], we considered requiring explicit permit or reject of each Peek request, but decided instead to share data automatically to pre-approved Peek contacts because peeked information might be most useful when it would be difficult for the person being peeked at to respond (e.g. when they are driving or in a meeting).

We believe that sharing on request and notifying the person who has been peeked offers a privacy compromise where context is only shared occasionally and social mechanisms can be employed if someone is peeking too frequently. Additional ways of controlling what context information is being shared include putting yourself in a 'no-peeking' state and removing someone from your Peek contact list.

Figure 1 and our video illustrate our prototype. Peek runs on Windows Phone. Initially, we have implemented sharing physical activity state (e.g. walking, in-vehicle, at-rest) in addition to location. More generally, Peek could incorporate other contextual information including phone state information (e.g. unused, in a call, playing a game), environmental noise information (loud, quiet) or calendar (in a meeting, free). We are intrigued by the possibility that sharing other contextual information could be more useful to the person peeking than sharing GPS-based location and could have fewer (or more) privacy concerns.

References

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