

Tangibility in social networks

Easing interactions with social networks in mobility using proximity sensor technologies

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The popularity of social network services and their extension in mobile environments raises privacy and usability issues. Indeed, it is difficult to establish a link between real locations or situations and virtual information such as a user's location or context. NFCSocial is a mobile application which tackles with this difficulty. By using proximity sensor technologies such as NFC to interact with federated social network systems, we want to introduce tangibility in these systems and to offer a more intuitive, comprehensive experience to their users.

1/ Issues

Social network services are now among the most popular services on the Internet. Services like Facebook, Myspace or Orkut count millions of active users. These users regularly add new friends to their network, describe themselves on their profile or update their presence or location information in order to share their current mood or activity with their peers. Today these social network services face several issues that may harm the social network ecosystem in the future.

First, despite initiatives such as OpenSocial or Friend Of A Friend (FOAF), the social network world is fragmented between a set of services that have different targets, different usages and which emphasize different kind of connections between individual. As a result, many people have accounts on these different systems and use these different accounts as multiple identities they present depending on the aspect of their identity they want to show. While this multiplicity of profile exposed is a necessity in order to achieve a control of the information shared with peers, this fragmentation may not be a proper way to achieve this goal.

Second, recent concerns have arisen about the privacy of the information shared among peers on social network services. Indeed, people want to keep a total control on what is shared about them and on who has access to this information. With the possibility to set location information or presence information on user profiles dynamically on these services directly from mobile applications, users are more and more confused about what the system really knows about them. These concerns tend to inhibit innovation in social network services because most new usages allowed by location techniques or context-aware information retrieval give users the impression of a loss of control.

Third, social network services propose more and more interfaces to update and access the dynamic information shared among peers. These interfaces also get richer and richer. This raises usability problems because the systems become more complex. As a result, the use of the service may become irregular, because the use of the system requires an effort from the user. Besides, privacy management operations may be tedious for average users because of the complexity of the profile management interfaces.

In order for the user to have confidence in social network services, their interfaces have to be simple and to give the user a clear view on what is shared with whom. According to us, making the social information shared with peers tangible is a way to achieve this.

2/ NFCSocial: an initiative to add tangibility to social network interfaces

In order to tackle the issues we presented previously, we developed NFCSocial [1]. NFCSocial is a mobile application that uses the Near Field Communication (NFC) technology to ease the collection of contextual and location data as well as the update of presence information on federated communication system and social networks.

The NFCSocial application uses NFC tags spread either in public places (restaurants, bars, libraries, railway stations...) or in locations that are meaningful to a given user (at his home, at his office...). When a user is nearby a tag, he can approach his NFC phone to it in order to update its location information on his favorite social network services. When the tag is detected by the user's mobile device, the NFCSocial application is waken up and retrieves contextual information linked to the tag in order to suggest presence statuses the user can use to update its presence information. The user chooses either one of the suggested presence states or a personalized one and sends his mood on the network.



Figure 1: NFCSocial screenshots

The NFCSocial application is connected to a converged communication network following the IP Multimedia Subsystem (IMS) architecture and send information to a Presence application server lying on top of this network. The presence server filters the information according to aggregation and privacy rules set by the user. Then, the information is distributed on a variety of social networks through a Social application server.

3/ Key contributions of the NFCSocial experiment

The physical tags that are used in NFCSocial help introducing tangibility in social network systems. Indeed, these tags link a location or contextual information set on virtual social networks to an actual physical location. This association is a key point in helping the user in the management of this location information [2, 3]. We also think that this tangibility can increase the user acceptance to use location information in social networks because this information is retrieved after a voluntary interaction of the user with a physical representation of the system. Indeed, this physical interaction removes suspicions and fears that may come from a misunderstanding of the pop-ups and warning messages introduced in common location based services interfaces.

Besides, the use of tags to wake up the NFCSocial application and to suggest presence statuses significantly eases the update of information on social network systems from mobile devices that suffer from several limitations (keyboard, use in mobility, readability). If updating information on social network systems is easier, we can expect the users to update their presence, location or contextual information more often [4].

Privacy management and user data control is performed on a unique central point, an application server that centralizes and filters. Users can set rules that apply to all the systems. These rules only depend on the relationship a user has with his peers and on the information he wants to share with them. This centralized control replaces the juxtaposition of isolated social network systems used by typical user to maintain barriers between their relational circles (friends, family, colleagues...) and to discriminate the information they want to share with them.

4/ Future studies

As unfortunately NFC technology is still not widely deployed, we will work on applying the design principles and user experience of NFCSocial to other proximity sensor technologies such as Bluetooth, Wi-Fi or 2D barcodes. The use of these technologies will require some

adaptations of the application to cope with specific constraints, but we will focus on using these technologies to provide contextual information that will ease the process of updating the presence information. Some of these technologies are less tangible for the users, and are seen as more invasive, so part of our efforts will focus on providing the user with a good vision of the information he shares with its community and with a convenient way to keep control on its data.

In our application, NFC is only used to update users' presence information on the system. The tangibility of NFC could be used to ease other user operations in a presence system. For instance, NFC could be used to ease the addition of a contact in a list, the setting of associated privacy rules, or the sharing of personal multimedia content. These operations usually involve tedious operations on administration interfaces, or complicated setup wizards on workstations aside the mobile application. We expect that the use of NFC, in peer-to-peer mode for instance, will help users to share and allow access to their personal information in a more tangible, user friendly and intuitive way.

5/ References

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