Managing Social Communications Identities

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Introduction

During the last years it has been witnessed the rise of a new trend of services on the internet: online social networks. From the personal spaces of Windows Live and MySpace to a more complete platform as Facebook or Google's OpenSocial initiative, hundreds of millions of users are connecting each other using these sites resources. Some researches [1] state that currently there are 500 million users on Social networks, and forecast a global amount of more than one billion users in the next three years.

Besides this successful and increasing amount of users, Online Social Networks are also changing the way users communicate between themselves and are even becoming an alternative way to traditional mailing systems.

In the context of the Telco Operators, online social networks provide an excellent channel for the distribution and advertising of services, moving from a traditional conversational services approach to an enriched social communications experience.

Social Communications

The traditional Telco services approach led to what have been called "conversational experiences", where users communicate each other mixing voice, text and video media or even integrating different sources of contents. In this context, the evolution to new generation networks is expected to bring a new variety of enriched and innovative services. But besides this evolution, the increasing success of Online Social Networks and their programmatically available resources may provide a different an interesting scope: Social Communications.

The Social Communications concept gathers a wide set of services and applications that appear as the result of integrating the social networks environment with the services of the telecommunication operators. This is a possible way to socialize operators services in the same way as Google, Yahoo or Apple have done with OpenSocial, Open Strategy and Mobile Me during 2008. This integration achieves two main objectives:

1. Improving online social networks communication experience with direct, personal and ubiquitous communication services that have been widely tested on Telco operators' environment
2. Enriching the operator's services with users' social context, quick and easy access to their friends or friends of their friends, and a new accurate user experience.

Following this way it is possible to engage the users to a "social communications experience". But in order to do this the differences between social and communication identities should be taken into account.

Social identities and Communication identities

Users' **social identities** are their names or alias on the different Online Social Networks. This way, depending on the nature and scope of a specific OSN, identities have different purposes. In a MySpace music profile, users have their artistic names if they are in a band, are singer-song-writers or amateurs DJs. These identities are publicly available, serve for promotion purposes and often are not linked with their real name or identity. On the other hand, in other sites like Facebook users fill their real names in order to comply with the Terms of Service. And if we consider professional networks like LinkedIn, users share not just their real name but their Curriculum Vitae.

The differences between social networks usage patterns are an image of real life's relationships. Users identify themselves with different nicknames or alias in the different groups they belong to, and each one of these groups has different privacy concerns: there are public profiles (like artistic or professional profiles) and private or close profiles (with my friends, with my family). The possibility of having different social information on each group and scope is one of the key characteristics of social identities.

On the other hand, **communication identities** are the number or address that users may use to contact other users with a phone call, a text message or any other communication service. In the scope of telecommunication operators the main communication identity is the phone number (fixed or mobile), although the evolution to new generation networks is trying to change this to a convergent and generic URI's based system. One of the key points of any of these identification alternatives is that they may be used to locate and contact users whenever they are available and wherever they could be. And even more important, as people usually have only one single communication identity (one mobile phone number, i.e.) and the cost of changing this identity is too high (it has to be informed to everyone with whom the users want to stay in contact), sharing users communication identities is sharing the right to be contacted from them at any time and in any place. All this "always connected" characteristics reflects that privacy within communication identities is not just important, is mandatory.

Linking social and communication identities

At a first glance two options may be considered to offer social communications services: using explicit or implicit communication identities. To fully understand these approaches, in the following explanation the users that initiate a communication are considered actors and the users that receive the communication are considered targets.

The **explicit communication identities** approach considers that actors already know the target user's communication identity. In this case, the actor has to explicitly specify the phone number of the user who wants to contact. One example of this approach could be an SMS widget with a form with two inputs: target user's phone and message text.

The **implicit communication identities** approach considers that actors don't have to know target user's communication identity to invoke an action and vice versa. In this case, a link must be established between users social and communication identities and this link must be kept private and only accessible by the service and the user. Once the link is established, users may interact with their social identities and the phone numbers may be kept private. If we consider mobile services like text messaging and phone calls, the sender or caller may be a short special number that could identify the real sender or caller's social identity.

Although an in depth analysis of these two approaches and their advantages and disadvantages may be left for further discussion, in the scope of this article, an implicit communication identities approach is recommended based on two important points:

1. Hiding the communication identity behind the social identity it's a key feature to provide a suitable privacy environment where it's more delicate, allowing users to configure who they want to grant the permission to contact them.
2. Managing the communication identities of the actors involved in a communication service execution and matching their linked social identities, enables the different services interfaces to gather information from their users' social profile and present it.

Taking into account this implicit communication identities model and following previously tested privacy guidelines [2], a Social Broker Architecture is proposed to grant the linkage between identities.

Social Broker Generic Overview

To enable the development and deployment of Social Communications Services and applications a gateway element between the Online Social Networks (OSN) and the Operators Network (ON) is required. This element is called the Social Broker due to its ability to handle the connection of the users to the different social networks and services. A high level architecture of the Social Broker is depicted in Fig. 1 where it can be differentiated:
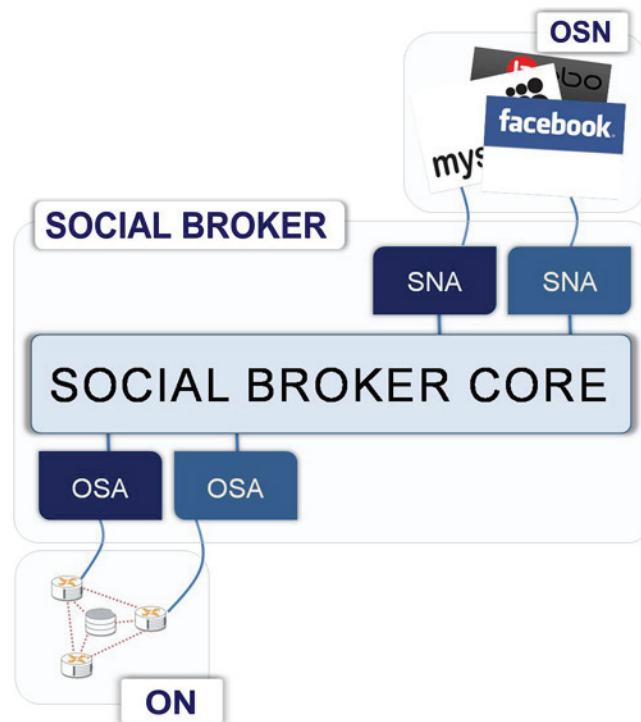

Fig 1. Social Broker Architecture

1. Social Networks Adaptors (SNA), which are the interfaces between the Social Broker and the different OSNs supported. Considering the current OSNs particularities, a different SNA for each OSN is needed.

2. Operator Services Adaptors (OSA), which are the interfaces between the Social Broker and the operators' capabilities. Currently there are several initiatives to standardize a set of common APIs for basic services and capabilities (GSMA or Telco 2.0, i.e.), but in a real and complex environment several particular adaptors may be needed.
3. The Social Broker Core where the identities are managed.

SCAs may be integrated in different points or slots of the OSNs, depending on their interfaces. User interaction on these SCAs may result on an invocation to the Social Broker Core where actors are social identities. Then, the Social Broker Core takes the associated communication identities, gathers the proper social information through the SCA and progress the request to the Operator Network through the different OSAs available. This way the user is engaged in a unified and social user experience both on the ON and OSN worlds.

To grant the adequate privacy environment to this generic architecture it must comply all the points described on the security model proposed in [2].

Conclusion

Online Social Networks provide telecommunication operators a new playground for enriched services. In this playground a proper and deep analysis of the differences between OSN identities and telecommunication identities may lead to the definition of a new and enriched social communications scenario where everyone is connected in a personal and social way while keeping a full control over the different permissions and which information is kept private .

References

[1] Pyramid Research, Inc., "Social Networking Goes Mobile", Feb. 2008

[2] O.M. Solá, R. de La Vieuville, J. Serna and A. Cadenas, "A Security Model Proposal for a Social Communications Broker" (in press), *6th Annual IEEE Consumer Communications & Networking Conference*, January 2009