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# An Interdisciplinary Problem Taxonomy for User Privacy in Social Networking Services

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**Abstract**

The mass adoption of Social Networking Services we witness of today does not only come with its upsides. Every now and then, we read about privacy issues in the press, reporting about upset users or security holes. Unfortunately, there is no simple solution to this, since there are conflicting interests involved for different parties. This position paper introduces a novel problem taxonomy for privacy-related problem areas in the realm of SNSs. It gives an interdisciplinary view on the relevant problem areas and their causal dependencies. It may serve as a proposal for a general model for future service design evaluations in this area.

**Keywords**

privacy, digital identity, social networking service, online social network

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## Introduction

The mass adoption of Social Networking Services (SNS) has been going on for a number of years already. As of today, about every tenth citizen of this planet is a member of at least one SNS. To operate their online lives on these, users naturally try to adapt the social and cultural norms they learned in their offline world to the online counterpart. Physical barriers, such as rooms, are often missing and most of our senses are not sufficiently served for correctly judging both the Social Context [6], i.e. the receivers, and the Communication Context [14], i.e. the contents of online communication. Hence, users accidentally damage their own privacy and those of others. Unfortunately, providing an approach for this manageable grievance, e.g. [10], often is not coherent with the goals of SNSs, which are mainly commercial [4]. Undoubtedly, contemporary SNSs leave room for improved mechanisms for users to effectively and efficiently control their privacies.

## Problem Areas and Origins

As we will show in the following, most of the privacy-related problem areas users of SNSs are faced with are based on the conflict of interest between users and providers. Driven by the human need for socializing and self-esteem [12, 15], users communicate online and thereby, put their own and the privacy of others at risk. On the other side, providers seek to maximize the flow of information to increase their user-base and content-base [16]. However, increasing the flow of user-generated and user-related content conflicts with the need for transparency and control, which users need to maintain their privacies [14, 17].

In the following, we will introduce a novel problem taxonomy for this realm in brief. In contrast to prior works [11, 4], we examine the problems from an interdisciplinary viewpoint. The defined problem areas were grouped by their severity of influence on the problem of privacy in SNS. Hence, the areas

are not necessarily causally independent. Figure 1 illustrates an overview of the causal dependencies of party goals and problem areas.

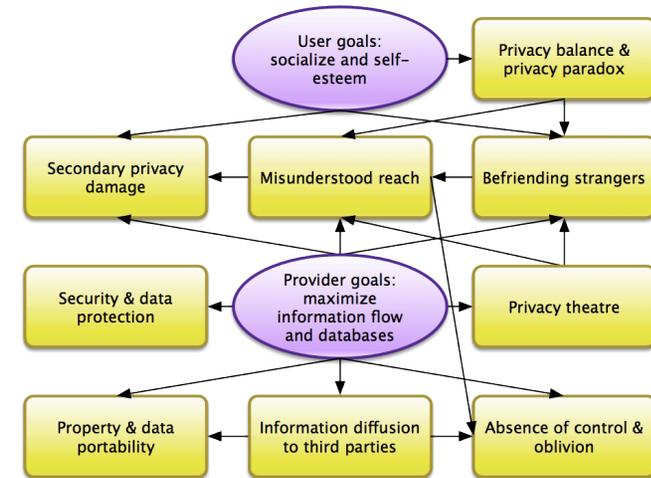


Figure 1: Overview of the causal dependencies between party goals (ovals) and problem areas (boxes).

## Privacy Balance and the Privacy Paradox

Privacy Balance and the Privacy Paradox are two user-focused decision-making phenomena. Privacy Balance is a rational adjustment each individual performs between the protection or disclosure of private information for a given benefit [5]. Privacy Paradox stands for an irrational and distorted decision-making process of an individual, trading off long-term privacy for short-term benefits [2]. The reason for the distortion are human needs for socialization and self-esteem [15].

### **Privacy Theatre**

Privacy Theatre describes the behavioral inconsistency of SNS providers claiming the protection of their users' privacy in the press and privacy policies to satisfy users, and maximizing information sharing behind the scenes [4].

### **Befriending Strangers**

Befriending Strangers is a problem that results from a lack of qualifiable friendship links on most SNSs. Combined with the fact that people tend to befriend strangers through an aberrant feeling of trust [7], and featured Game Mechanics making this fun [9], it causes a weakened control over the flow of information and increases the invisible audience on platforms that implement access control based on friendship links.

### **Misunderstood Reach**

Misunderstood Reach is caused by providers not clearly communicating user profile visibility and the reach of personal information. In a subjective feeling of control and as a result of the misconception of its flow, users communicate and chat on these platforms, sharing private facts, gossip, pictures and rumors [1].

### **Absence of Control and Oblivion**

The lack of transparency concerning the reach of information for the sake of information flow often comes with a vacuum of controls for users to steer the accessibility of their information [8]. This implies a definable lifetime and removal of information, which is featured rarely [4].

### **Secondary Privacy Damage**

Secondary Privacy Damage is a problem area that arises from the problem of Misunderstood Reach. It describes users inadvertently threatening other individuals' privacies without their

knowledge or opting into a service by disclosing or linking to their identities [13].

### **Security and Data Protection**

In the realm of SNSs, Security and Data Protection is a problem area that refers to missing barriers to hinder wrongdoers from approaching users, software flaws and errors, and computational predictability of protected information via the users' social graphs or other algorithmic threats to users [4].

### **Information Diffusion to Third Parties**

This problem area threatens user privacy by selling and replicating private information to other parties, making information and especially its clearance effectively uncontrollable [13].

### **Property and Data Portability**

Based on Web 2.0's aspect of Data-Drivenness as part of most providers' strategies [16], they tend to maximize the property of data produced by their users and to minimize the technical possibilities to export or synchronize data with other SNSs [3].

### **Conclusion and Outlook**

In this paper, we have introduced a novel, interdisciplinary problem taxonomy for the realm of online privacy in SNSs. Without *transparency* to sense the boundaries and consequences of online communication, no informed decisions can be made by users to *control* the audience and the flow of their information. In the HCI field, we see a need for the research for more sophisticated, but intuitive tools for transparency and control concerning the reach of private data published online. In our future work, we want to research Pareto-optimal solutions to approach the parties' contrary goals. Our hope is that our problem taxonomy may serve as a proposal for a

general model on which future research and design decisions can be based on to approach the issues in this field.

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