Research on Social Trust of Internet Services

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Abstract. As the Web has shifted to an interactive environment where ever-growing set of applications is provided and much content is created by users, the question of whom to trust and what information to trust has become both more important and more difficult to answer. Social trust can be used to sort, filter, or aggregate information, or to visibly score content for the benefit of the users. Blending social computing with service-oriented computing leads to SWSs that "know" with whom they've worked in the past and with whom they would potentially like to work in the future. A social network-based strategy for Web service trust management intends clearly to reinforce Web services' performance capabilities through a fine-grained consideration of analysis and reasoning and consideration of "extra" information such as past experiences rather than just information related to Web services. For social trust comprise all sorts of immeasurable components, particularly challenging to working with be presented in the paper.

Keywords: Services Trust Management, Web Services, Social trust, social computing.

1 Introduction: Trust and Internet

The Web has dramatically changed the way the connected world operates. As the Web has shifted to an interactive environment where ever-growing set of applications is provided and much content is created by users, the question of whom to trust and what information to trust has become both more important and more difficult to answer. Unlike traditional computing environments that treat reliability, responsiveness, or accuracy as measures of trust, the fuzzier social trust is particularly well suited to these new Web settings. Computing with social trust—whether modeling it, inferring it, or integrating it into applications—is becoming an important area of research that holds great promise for improving the way people access information.

We frequently trust email systems in the sense that we believe we're receiving email from the asserted source. One reason we're comfortable doing this is that the context and content of the received messages can often establish a basis for trusting that the source is accurate. Email from strangers should be treated with more suspicion unless, perhaps, introduced by a trusted source. It's worth observing that trust doesn't always scale well. We can establish trust among a small group of people known to us, but it's harder to achieve trusting relationships on a larger scale.

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Going back to the credit-card analogy, we're able to trust merchants we don't otherwise know because we know that the credit-card companies can withdraw payment for a fraudulent transaction. This is a clear example that risk mitigation enhances our willingness to trust an otherwise unknown party.

There isn't an argument that we should get off the Internet or stop using it. It's too convenient and increasingly too necessary. Instead, it's an argument for improving our security practices so as to mitigate risk and engender justifiable trust in the system. This preamble takes us to the question of trust in the use of the Internet. Its nearly 2 billion users probably trust the Internet's applications more than they should but don't engage in risk mitigation practices as much as they should. As with all things Internet, we must think through various means of compromising the system (such as "man-in-the-middle" attacks) so as to reduce the risk of trusting the authentication exchanges and subsequent transactions.

2 Web Users' Need for Social Trust

There are two important entities on the web: people and information. The numbers of both are in the billions. There are tens of billions of Web pages and billions of people with Web access. Increasingly, average Web users are responsible for content on the web. User-generated content is everywhere: discussion boards in online communities, social network profiles, auction listings and items for sale, video and photo feeds, reviews and ratings of movies, hotels, restaurants, plumbers, and more. While this content can be very helpful to users, the volume can be overwhelming.

With so much user-interaction and user-generated content, trust becomes a critical issue. When interacting with one another, users face privacy risks through personal information being revealed to the wrong people, financial risks by doing business with unreliable parties, and certainly inconvenience when spam or other unwanted content is sent their way. Similarly, information provided by users can be overwhelming because there is so much of it and because it is often contradictory. In some cases, it is simply frustrating for users to try to find useful movie reviews among thousands or to find a news report that matches the user's perspective. In other cases, such as when considering health information, finding insight from trusted sources is especially important. While users could formerly judge the trustworthiness of content based on how "professional" a website looked [1, 2], most of this new content is on third party sites, effectively eliminating visual clues as helpful factors.

There are, of course, plenty of cases where popular opinion or a central authority can help establish trust. A website with VeriSign credentials, for example, can be given some added degree of trust that it will protect the user's sensitive information. Peer-to-peer networks use measures of reliability for each peer as a measure of trust. However, these instances say more about the broad definition of "trust" than a solution to the problems described earlier. In the cases of user interaction on the Web or user-generated content, trust is often not an issue of security or reliability, but a matter of opinion and perspective. When looking at book reviews, for example, titles will often have a wide range of positive and negative reviews. Even dismissing the most misguided ones will leave a large set of valid opinions. Establishing trust, in this case, means finding people whose opinions are like the user's, that is, social trust.