International Journal on New Computer Architectures and Their Applications (IJNCAA) 1(3): 820-832
The Society of Digital Information and Wireless Communications, 2011 (ISSN: 2220-9085)

Protection of Personal Information based on User Preference

Kenichi Takahashi[1], Takanori Matsuzaki[2], Tsunenori Mine[3],
Takao Kawamura[1] and Kazunori Sugahara[1]

[1]Graduate School of Engineering, Tottori University,
4-101 Koyama-Minami, Tottori 680-8552, Japan.
{takahashi, kawamura, sugahara}@ike.tottori-u.ac.jp
[2]Kinki University School of Humanity-Oriented Science and Engineering,
11-6 Kashiwanomori, Iizuka-shi, Fukuoka 820-8555, Japan.
takanori@fuk.kindai.ac.jp
[3]Faculty of Information Science and Electrical Engineering, Kyushu University,
744 Motooka, Nishi-ku, Fukuoka 819-0395, Japan.
mine@al.is.kyushu-u.ac.jp

ABSTRACT

Some of Internet services require users to provide their information such as their name, address, credit card number, and an ID-password pair. In these services, the manner in which the provided information is used is solely determined by the service providers. As a result, even when the manner appears vulnerable, users have no choice to refuse, but to allow such usage. However, the owner of the information is the user. Thus, users along with the service providers should be able to determine the manner.

In this paper, we propose such a framework that enables users to select. A policy defines the manner in which his/her information is to be protected, and its manner is incorporated into a program. By allowing a service provider to use the information through the program, the user can protect his/her information in his/her selected manner. Thus, in this scenario, both the service provider and the user can determine the type of protection for the user's information. Moreover, the responsibility of the service provider for information protection would be reduced as the user would determine the type of information protection. We show the validity of the proposed framework with an example scenario to protect user password.

KEYWORDS

Privacy, personal information, user preference, information security, framework

1 INTRODUCTION

Nowadays, we use various Internet services in our business and daily life. Some of these services require users to furnish personal sensitive information such as their name, address, credit card number, and an ID-password pair when they use these services. For example, an online shopping site may request user's address and credit card number for the shipping and the payment of an item. However, several cases of information leakage, such as those involving Yahoo! BB and CardSystems Solutions, have been reported. For example, a leaked credit card number may lead to the loss of money and a leaked name may lead to privacy issues. Thus, information