

A Study on the Automated Design of Business Card for Personal Information Leakage Prevention Using IT-based Convergent Service

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Abstract

When producing a business card, there is always a risk for exposing personal information as the information from the business card application is saved in the computer of the printing agency. The information that goes into the business card application file, such as name, mobile phone number, and e-mail address is not encrypted, which makes it easy to access. This study was conducted in order to find a way to automatize the business card application process by encrypting the information entered into the business card application file, simplifying the business card application process, minimizing the workload and by directly linking to the print shop to remove the print file after completing the printing of the business card.

Keywords: *Card Automatic, Information Disclosure, Automatic deletion, Personal Information.*

1. Introduction

Please People use business cards as a means of telling people they just met of their occupation. A business card is a tool used to form mutual relations, and is currently used a lot offline.

When looking at the flow of the production process of a business card, in the case of producing in bulk by an enterprise, the enterprise enters the personal information in an Excel document and delivers it to the print shop. Once the design is determined, the personal information will be printed accordingly. Even though the printing work is completed, oftentimes, the corresponding personal information is not discarded. There is now a higher chance that the personal information, such as important position and contact information at the enterprise, may be exposed at this time.

Recently, there have been many cases of personal information being leaked such as the incident at ESTsoft, the homepage hacking and personal information leak at KT (one of the representative companies of Korea), and the personal information spill from the internet shopping mall Interpark. The release of personal information by a person pretending to be an acquaintance of an internal employee, known as spear phishing, and the network intrusion by sending emails leading to fake sites were used in the KT incident. The hacking

incident of the personal information spill at KT was done by a hacker normally logging into KT homepage and sending the normal login information value (cookie), changing the KT value with normal login information value (cookie) and other people's customer service contract numbers and downloading the customer's personal information as an excel file [1].

Similarly, when enterprises and individuals make their business cards, the personal information such as the enterprise's information, personal mail ID, name, mobile phone number and email get leaked but there are no established countermeasures to prevent it. In general, when requesting to make a business card, the personal information of the company which requests to make a business card is saved in the PC of the printing agency, and therefore, there is always the risk of being leaked and there is no current methodology to solve these problems.

Recently, the leakage of personal information in cyberspace is caused by a side effect on the Internet. In 5 years in Korea there were 209 cases of core technology leak events. And among them, 60.8% were done by former employees and 19.6% were done by current employees. Card type USB, external hard and smart phone have been used as the leak path [2].

In this study, the problem of personal information leaks was solved through secure encryption, by designing a program so that the print shop, company's and IT technology's services could be provided together. By the print shops utilizing the automated solutions to make the business cards, and simplifying the task process they protect the often leaked personal information and turn towards the automation of the business card making methods. In addition, this study suggests the methods to design the encryption technology of the database to prevent the leakage of personal information, to design network encryption processing technology, and design the automatic processing technology of business card automation system.

2. Related Studies

This section explains the protection technology to prevent the personal information leakage for proposed IT based fusion technology, the parts that have similar functions with the proposed system and the differentiation of the proposed system in this paper.

2.1 Personal Information Spill Prevention Protection Analysis

The protection technology for personal information leak can be classified into Privacy Invading Technology (PIT) and Privacy Enhancing Technology (PET). In order to safely protect one from the dangers of PIT, technology is required to block the obtaining of location data through mobile device GPS's, the obtaining and identification of personal information using cookies and to block the obtaining of personal information through profiling techniques.

PET which is a variety of protection technologies enhancing the personal information, can minimize the collection of personal information, make the personal information anonymous, and provide the access to the personal information data and provide the data tracking as well as direct personal information control by the user. In a computing environment, a key management server authorizes a user to register [3][4][5].

2.2 Hybrid-based Business Card Production and Management Analysis

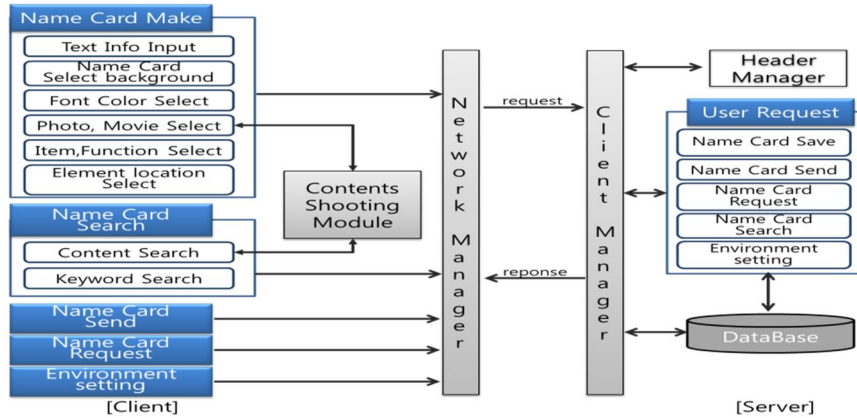


Figure 1. Hybrid business card production management system structure

Figure 1 is a system to produce the business card which is a hybrid-based business card production system. Using the characteristics of mobile terminal, the picture attached in the business card is produced using the camera function, and it is possible to transfer the produced business card to other people’s business cards. The produced business card is searchable and it has a feature that can be used to transfer the client’s business card information by converting to vCard format. Hybrid method of production and management system has increased the efficiency of business card search occurring in the business card system by saving the business card into the sever instead of saving it in PC of mobile. It is possible to change the business card freely in mobile environment, which can produce and manage the business card uniquely [6][7].

2.3 Mobile Business Card Sales Support Solution Analysis

The global IT enterprises play a key role and the enterprise information is utilized with sales automation solution developed by linking with CRM platform. The enterprises such as Salesforce.com, Oracle, and Microsoft lead this market by expanding the business card management and applying it to CRM.

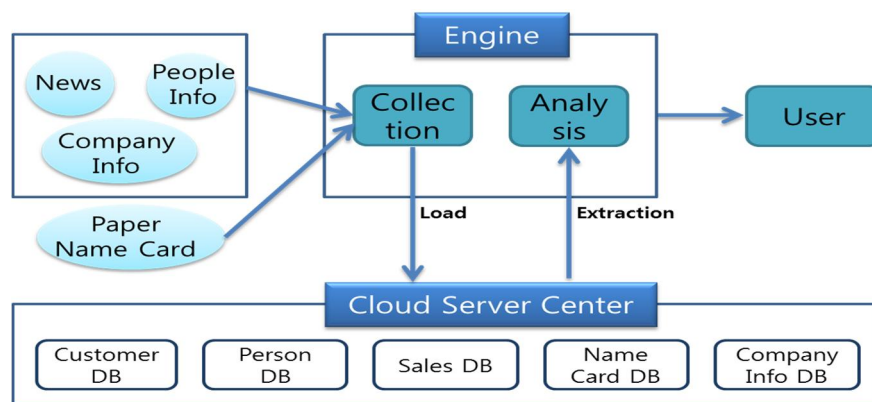


Figure 2. Business card production flow chart

Figure 2 is a conceptual diagram of sales automation solution operated in the cloud environment. It provides the cloud-based environment, and the cloud server does customer management, personal

connections management, business activities, business card management and business information management, which makes it possible to organically link with the engine. SaaS (Software as a Service) type application, which is a maker leader in the cloud-based CRM field, do Salesforce CRM, and PaaS-type Force.com platform services. It builds with Amazon web service, sharing web service API via Google App Engine and ecosystem with Facebook. Siebel CRM on Demand Sale3 is a CRM solution for business management of Oracle [8].

Mobile business sales support management solutions with similar functions as a simple management system that manages the cloud based business cards by collecting and extracting automatically. In addition, the hybrid business card production and management solution is a technology to transfer or manage the business card, which is distinct from the automation system proposed in this study. This study is to propose the technology to solve the problem of personal information leakage when printing the business card in bulk, to provide a bulk service from business design revision to processing by fusing the print shop, enterprise and IT technology and to design a system that deletes the personal information with completed business card production automatically. This proposed technology has an outstanding feature of preventing the personal information leakage compared to the existing method.

3. Fused Business Card Automation Service Proposal

3.1 Processing Plan for Preventing Personal Information Leakage

For the business card automation system for preventing personal information leakage, it is proposed the system to design as that once the individual and executives apply for business card, the manager at the enterprise approves this application, this application is automatically placed an order at the print shop at the print management server, which is an automated business card system, and when printing is completed, the content of the ordered business card will be deleted automatically.

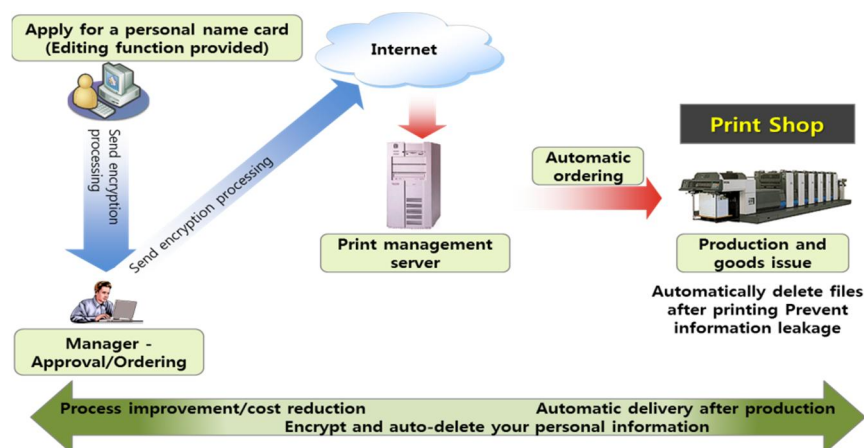


Figure 3. Process flow to prevent leakage of personal information

In the existing system, to make the business card at the department of the enterprise, the person in charge goes through the inconvenience of checking the revision details by mail or by printing the sample, collecting all data for applying business card, documenting and delivering them by mail or printout to the print shop. Also through these processes, there is a risk of personal information leakage in the enterprise. In order to improve these problem, the processing plan shown in Figure 3 is proposed to prevent the personal

information leakage.

3.2 Fused Business Card Automation Service Streamlining Process Plan

This study proposed the system that the individual company simplifies the business process, and the print shop process the business card automatically using the system made automatically, and the data is encrypted in the system and once the process is completed, the information is destroyed automatically.

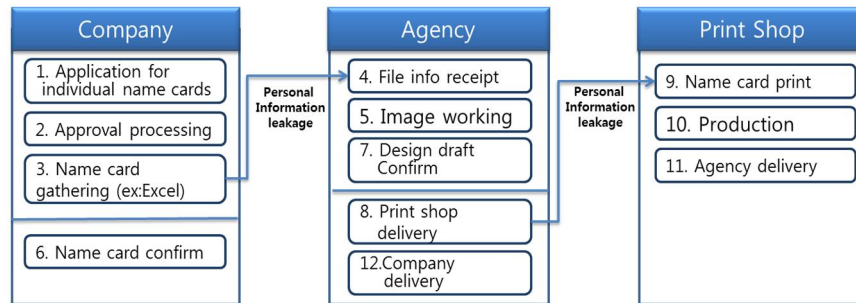


Figure 4. Existing Business Card Production Flowchart

Figure 4 shows the traditional business card processing method, which shows various problems including the risk of organizational and personal information leakage from agency and print shop with the existing complex processing, risk of omission due to the handwritten application, difficulty of performing efficiently, excessive workload when producing in bulk such as personnel appointments and reorganization.

The traditional business card process was done by the management department in the enterprise. The management department collects the information and determines the business card design, which takes a long time and has the risk of omission due to the handwritten application, and takes a lot of miscellaneous work time for person in charge, and both design company and print shop have the risk of personal information leakage related to the most important corporate personnel affairs.

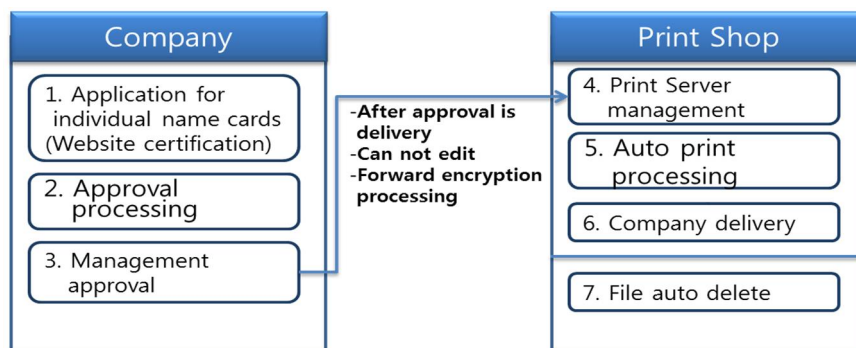


Figure 5. Business card production flowchart proposed in the study

Figure 5 shows the business card automation system, which suggests the method to simplify the business in the corporate: once applied and approved individually, the business card application will be completed at the print shop using the automated system and printing job will be started right away, and the business cards are delivered after completing the printing, and the automatically applied business card file will be deleted automatically.

4. Conclusion

The business card automation system for preventing the personal information leakage will increase the business efficiency in the corporate and it will reduce the workload of the person in charge and make the management easy and there will be no worries about the personal information leakage. This study proposed the method that the print shop can print and deliver the business card through the automated system without managing the personal information separately, so their business can be simplified, the production time is shortened and bulk production and the nationwide business card process are possible, and once the printing is completed, the personal information is deleted automatically, and it will be safe for protecting the personal information of both the corporate and print shop.

In the future, this study needs a model to actually implement based on the business card automation system design, also it needs to study a system that a user can correct and amend the business card directly in the business card automation system and the system that the user can add and apply the necessary items needed for printing besides the business card.

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