# 정보시스템 부정행위 신고시스템 설계

이중희<sup>\*</sup> · 이상원<sup>\*\*</sup> · 안현섭<sup>\*\*\*</sup>

## \*(주)재이컨설팅

\*\*원광대학교 정보전자상거래학부(융복합창의연구소)

## \*\*\*\*브라운슈바이크공과대학 경영정보학과

Design of Fraudulent Process Notification for Management Information Systems

Joong Hee Lee<sup>\*</sup> · Sangwon Lee<sup>\*\*</sup> · Hyunsup Ahn<sup>\*\*\*</sup>

\*J Consulting Co. Ltd.

\*\*D. of Information & Electronic Commerce (I. of Convergence & Creativity), Wonkwang University

\*\*\*Department of Wirtschaftsinformatik, Technische Universität Braunschweig

E-mail: jhlee@jcons.co.kr, sangwonlee@wku.ac.kr, hs.ahn@tu-bs.de

### 요 약

많은 기업에서 부정행위나 절차가 만연하고 있다. 하지만, 직원들은 방어적 또는 반응적 보복을 당할까 두려워 불법적인 행위들을 고발하지 않고 있다. 이러한 배경에서 부정행위를 신고할 수 있는 시스템을 제안한다. 본 설계는 기업현장에서 정보시스템을 사용함에 있어서 발생하는 부정적 절차에 대해 효과적인데, 이 부정절차 신고는 신고처리, 신고방법, 저장매체 등과도 연관을 가지고 있다. 우 리는 시스템과 신고자의 관점에서 부정절차 신고에 관한 전체적인 구조를 설계하고, 추가적인 신고 세부방법에 대한 설계를 덧붙이고자 한다.

### ABSTRACT

In many enterprises, fraudulent activities and processes are widely prevalent. But, their employees would not report the illegal activities since they would be attacked by defensive and reactive retaliations in their enterprises. Against this backdrop, we design notification systems for whistle blowing. The design would certainly be useful for fraudulent process notification while using management information systems in the field of business. The fraudulent process notification is related to whistle blowing systems, methods, storage media, and so on. Also, we establish the whole architecture of fraudulent process notification with functional structure from the viewpoint of systems and whistle blower. The flow diagram of notification method is added.

## 키워드

Fraudulent Process, Whistle Blowing, Audit, Notification

#### I. Introduction

Even though fraudulent activities and processes are widely prevalent in many enterprises, their employees would not report the illegal activities since they would be attacked by defensive and reactive retaliations in their enterprises. Against this backdrop, we design notification systems for whistle blowing. We firstly design the general structure of fraudulent process notification systems. And then, we secondly design the detailed modules of the systems. And lastly, we show its implemented website names as Whistleblower.

#### II. General Structure of Fraudulent Process Notification Systems

The fraudulent process notification is related to whistle blowing systems, methods, storage media, and so on. Also, we establish the whole architecture of fraudulent process notification systems with functional structure from the viewpoint of systems and whistle blower. In the architecture, fraudulent process notification systems are linked with clients (of administrator and reporters), agency clients, and servers (of mobile telecommunication, reporter's banks, administrator's banks, and agency's banks) (Figure 1). The telecommunication network means the ordinary network like the Internet and includes both wire ones and wireless ones. Especially, in order to make it possible to link with mobile clients, mobile telecommunications such as WCDA or LTE are included. The agency means enterprise or public organization that receives and rectifies a notification of a reporter. A reporter is a person who reports a fraudulent process. A server of the reporter is a mobile client to execute the application of fraudulent process notification systems. A person in charge of fraudulent process notification uses the server of the agency.



Notification Systems

### III. Detailed Design of Fraudulent Process Notification Systems

The detailed design of our proposed systems is composed of the functional structure of fraudulent process notification systems, the functional structure of reporter clients, and the flow diagrams of fraudulent process notification method. (1) The functional structure of fraudulent process notification systems comprise five major procedural steps such as the linkage module of reporter client, the linkage module of agency client, the process module of compensation, the management module of application, and the module of administration. The procedural modules are supported by databases including information of agencies, notifications, response results, and compensation results. (2) The functional structure of reporter clients comprise six major procedural steps such as the input module of agency identification code, the input module of notification, the input module of compensation account number, the linkage module of systems, the management module of telecommunication service provider's identification code, and the management module of application version.

#### IV. Practical Implementation of Fraudulent Process Notification Systems

We implement a practical websites named as Whistleblower by use of the general design of general structure and its detailed designs of fraudulent process notification systems (Figure 2).

a month and a second second	whistlebiower.co.kr				100		
	whispepiower.co.kr						
Uhistleblower							
				-	1112 2	ALL ADDA	
	-			기업 대상	1 8 2 2 AN	22 52 52 52	9. 9.
1						17	
	- 1				The	1 to	10.
	21	관리자		온라인신	a B		NE.
				_	1 5	6 1	
	1. 1. 1.					ten	C P
	1.84					Ver	
* (B재이컨실럽과 내부 제공한 기업의 시비/	육은 온라인신고 시 2 관리지로 입장이 된	비스 사용계약을 탄장됩니다.					~
							ŝ
							COMODO
					-	orașe 2012 (Core-M	ing inc. Ad Highly Reserve
1 70 820 - White F- +			1000	1. 10		1.00	(ola
F → C B https://www.	whistleblower.co.kr/			gin			
Uhistleblower							
Admin	7174	loc					
	기관 로	151					
	1기관 로그인						
		я	22	20225	×		
			110				
		-	17.8				
							<b>#</b> 23
Second 2015 Develop in All spec	a manual						
Separate 2013, Generating the Attraptic	1 marted						
Separate 2013, Sciencifica, Int. All rans	a manoad	10 10 10	-				
leggend 2015, Security to All opti- [	a manuficial state of the state	LiternalProsecu	ent Con		£ [4	J-22.00	
2012년 213 (Service) In 4 1일 () 문자(인국 - Male III - 1 () 순 () 월 사인도 가고 20 문자() 일 자() 월 사인도 가고 20	whisteblower.co.kr/	ExternalProsecu	ton	-2	* La	-1-10-10	
Experted 2015 (Services to a strape ↓ Britgs 2.2 Works Bio. • ↓ C (B) Artigs (Articles Bio. • ↓ C (B) Artids (Articles Bio. • ↓	whistleblower.co.kr/	Edemal Prosecu ergy (G.)	fon	- <u>11</u> -1	- La	() en	قلعا م
Elegand 201 Services to strap Elegand 201 Services to a P → C D Maps Anno 10 Maps anno 10 Maps Anno 10 Maps Bank an anno 10 Maps Bank an anno 10 Maps Bank ann	n manufit whitstieblower.co.kr/ IS SDE #2-7440.44	External Prosecutor Regular	fon		#1 <sup>°</sup> [_4	0.00	tola 1
E grigge a skille for a skiller C grigge a skille for a C grigge a skille for a skiller White the Alexandre	whisteblover.co.lz/	External Prosecutor arguna	fon		÷. [		• +(\4() 88012
C 24222 - shine to those C 24222 - shine to those C 24222 - shine to those C Unissibility of the top of the top White Steblower White Steblower	anhadediower.co.kr/ 2 2 2029 분 가운데 U	Lamal?iosecu trguto	Son				1 1 ** +<===================================
exception 2013 (Section 2 on a fingure () @Algo:2. However ) ⇒ 0 € () Algo://www. @WhitsGoblower WhitsGoblower	ahadebowe cak/ 그 프로프 및 가운드 U 온 라인신 ( g.a. 2019년	LaendPosecu MguG	ton				1 ** +<===================================
energia 20 Sectors and an energia 20 Sectors an energia 20 Sectors and an energia 20 Sectors an energia 20 Sector	anistelower.co.kr 그 ECE 또한 가운다.U 온라인신 I 전규 운전전신	LoenalPostou equita 2	fon Pa	428.72			0018 ** H(H) 8.88(12
स्वरिष्ट्रा स्वर्धन के विद्यार कि विद्यार स्वर कि विद्यार कि वित्यार कि कि वित्यार कि वित्यार कि कि वित्यार	antatelower.co.kr 2 200 분위 가지도 온라인신 1 년규 온레인션	LaenalPootecu regula 1 2 2 7	ton 砂油	90 # >2	-		* +(H4) > 80602
Hand Difference and the second	amathelioure color 2 100 10 10 10 10 2 100 10 10 10 10 1 0 - 2 2010 1 0 - 2 2010	Liternal Prosecu Marulo 2 2 7	tion .	1998.7tt		-)	الله ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲
La paga atawa sa aja Paga atawa sa aja Paga atawa sa aja atawa Watababawa Ba Bataba	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	EsternalProsecutor Regues 2 2 7 7	tion .	428 70			0000 ( 000 ( 000 000 ( 000 000 ( 0000
In angle 1 - general to a series of the seri	antisteldower co.kr 고리가 또 가지요. 나 온 라 인 신 1 년 규 온 대 인 신 1 개은 성 고 트	СсенийРозеси алучий 2 7 1 1 2 2 7 1 1 1 2 2 7 1 1 1 2 2 7 1	50n 772	008 N2	*		• ++++ = = = = = = = = = = = = = = = = =
Investigation (Section 2014) Investigation (Section 2014) Invest	****** ******************************	2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	500 272 272 272	498 72 328 72			** +(ve) = 80002 ** +(ve) = 80002
147223-14844 C 2 1972-1484 C 2 197	2003년 2003년 - 2017년 1 년 규 운영원년 1 전규 운영원년	Chernal Postor regula 2 2 7 V + 2 7 8 V + 2 8	500 278 278 278 278 278 278 278 278 278 278	(408 Mg) (408 Mg)		-)	нова мик) ворог мик) ворог
Ale Sadah Shi Ale Sadah Shi Casaran Shi Ca	* mente 2 라이언스 ( 신규 운영인스 ( 신규 운영인스 ( 가운 신고 토목	LternalPopeou Tryuci 2 2 7 7 8 8 8 8 8	000 072 072 072 072 072 072	10.08 No.			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Figure 2. The Website of Whistleblower Systems

## V. Conclusions

Our research on systems design of fraudulent process notification for management information systems would certainly be useful for fraudulent process notification while using management information systems in the field of business.

#### References

[1] B. Marrick, The Craft of Software Testing:

Subsystem Testing Including Object-Based and Object-Oriented Testing, Prentice Hall, 2010.

[2] C. E. Landwehr, A. R. Bull, J. P. McDermott, and W. S. Choi, "A Taxonomy of Computer Program Security Flaws," Computing Survey, No. 9, pp. 211–254, 1994.

[3] C. P. Pfleeger, Security in Computing, Prentice Hall, 2013.

[4] D. P. Siewiorek, "Fault Tolerance in Commercial Computers," IEEE Compter, No. 7, pp. 26-37, 1990.

[5] E. Turban, E. McLean, J. Wetherbe, Information Technology for Management, Wiley, 1999.

[6] J. A. Clapp, F. S. Saul, W. W. Peng, D. R. Wallace, A. C. Deborah, and J. D. Roger, Software Quality Control, Error Analysis, and Testing, Noyes Data Corporation, 2005.

[7] M. H. Stocks, J. R. Brian, S. Tommie, and K. R. Robert, "An Empirical Investigation of Information Systems Audits and Software Piracy," Information Systems and Control Journal, Np. 6, pp. 32–40, 1997.

[8] R. Weber, Information Systems Control and Audit, Prentice Hall, 2013.