

Elucidating Digital Information and Wireless Communications Technology for an Electronic Working Logs and Applications

De-Ji Jang¹, Chih-Yung Chen² and Shieh-Shing Lin³

^{1,3}Department of Electrical Engineering

²Department of Information Management

St. John's University

499, Sec. 4 Tam King Road, Tamsui, Taipei 25135, Taiwan

E-mail: ¹tedjang@gmail.com, ²yung@mail.sju.edu.tw, ³sslin@mail.sju.edu.tw

ABSTRACT

This work focuses on the troublesomeness of the traditional hardcopy working log sheets used in officers, proposing a Digital Information and Wireless Communications Technology based a Noble Design of Electronic Working Logs (EWL). This work also employs this dedicated tool to a real agent. There are some special features in this work: i) Easily operational interface, users can simply and instantly inquire the on-line request through the EWL; ii) Instantaneously monitor the situation, supervisors can clearly scrutinize the events; iii) Forever preservation, agent can conserve the electronic working logs endlessly due to the EWL. This work also implements the proposed EWL in a real officer agent and obtains some successful results.

KEYWORDS

Digital Information Technology, Wireless Communications Technology, Hardcopy working log sheet, Electronic Working Log, Supervisors.

1 INTRODUCTION

Digital Information and Wireless Communications Technology are widely spent in many filed listed [1]-[15]. Up to now, the Intelligent Information Systems and E-commerce Technologies are also broadly devoted in the literals listed in [16]-[42]. However, up to now, there are few documents exploring the application of this technology in officer working logs.

There are some drawbacks in conventional hardcopy working logs for officers: i) *too much time consumption*; officers should accomplish the

corresponding data for the conventional hardcopy working logs while the duty is off and executing the duty transition in every mission. It is certainly too much time consumption for officers in every mission, especially, while the emergency case occurred. It could make cases worse to the delay for the next duty execution; ii) *hard to examine the hardcopy working logs*, the conventional hardcopy working logs are not easy being checked and Verification as to the history events for the executed duties. Moreover, supervisors cannot validate the corresponding records for the correlated events; iii) *difficult to preserve for the hardcopy working logs*, the contents of the conventional hardcopy working logs are consisted with traditional paper and they are not easily to kept in good condition owing to the wet in the air. In convention, five years is the period of keeping for conventional hardcopy working logs. Furthermore, they are obviously too much space consumption for every agent. Focusing on the inconvenience and drawback of the traditional hardcopy working logs sheet used in officers, this work proposed a Digital Information and Wireless Communications Technology based a Noble Design of Electronic Working Logs (EWL) and employed this dedicated tool to a real agent. There are some special features in this paper: i) Easily operational interface, users can simply and instantly inquire the on-line request of the EWL; ii) Instantaneously monitor the situation, supervisors can cleanly scrutinize the events; iii) Forever preservation, agent can conserve the electronic working logs forever due to the EWL. This work

also implemented the proposed EWL in a real officer agent and obtains some successful results.

Following of this work is organized in the subsequent manner. Section 2 presents the Texts Analysis for the conventional hardcopy working logs for routine duty in agent. A Digital Information and Wireless Communications Technology based a Noble Design of Electronic Working Logs (EWL) is proposed in Section 3. Section 4 implements the dedicated design EWL in a real Agent. Finally, this work makes a brief conclusion in Section 5.

2 TEXTS ANALYSIS

2.1 State of affairs of the Electronic Sheet in Agent

The applications of Digital Information and Wireless Communication Technology used in agent were raised from 1997. Up to now, few and/or not too many attempted to conduct these technologies to many agents. Nevertheless, there are very few applications corresponding to the Electronic Working Logs for officers. There are four stages of the project of Electronic/Network promotion in Agent from 1997 stated below:

2.1.1 Periods of Electronic government plan in Agent

Level 1. The mid-term plan of the Electronic/Network promotion in Agent was executed from 1998 to 2000.

Level 2. The project of the Electronic Promotion in agent is executed from 2001 to 2004 and the E-agent Project was executed from 2003 to 2007. Subsequently, the challenged Project and Digital Project in agent were executed from 2008.

Level 3. The Project of high quality Network Processing was executed from 2008 to 2111.

Level 4. The intelligent improvement Project in Agent was executed from 2011 to 2016.

2.2 The Original Investigation and On-Line Simulation of the Electronic Working Logs for duty in Agent

2.2.1 Novelty of the Electronic Working Logs

Owing to the following explanations, the Electronic Working Logs for duty was created;

- a) There existed too much time and space consumption for agent and duty;
- b) It is hard to examine the hardcopy working logs for supervisors and/or officers;
- c) Additionally, it is difficult to preserve for the traditional paper hardcopy working logs.

Moreover, it is a trend for Agent to been Electronic/Network for Duty in this age.

2.3 Prototype of the System Development as to the Electronic Working Logs and On-Line Test

First of all, the prototype dedicated design of this Electronic Working Logs for duty is only executed in only one unit in a single agent to simulate the efficiency of this design. Furthermore, the following four steps tests are executed to justify and/or rectify the procedure of this EWL.

2.3.1 Process Stages

Step 1. System Analysis and Program Construction- Focusing on the inconvenience of the traditional paper hardcopy working logs sheet used in officers, this work rectify this drawback owing to the experience.

Step 2. System Test- Only one unit in a single agent of the Department of Information Management Office executes the system test and Hardware and Software combination.

Step 3.Traning for the users as to the officers in agent- One agent of the Department of Information Management Office executes the training.

Step 4. Spread this proposed Electronic Working Logs for duty to other units in this agent- Invite other units join this project.

Subsequently, the On-Line tests associated with other units in this agent are executed and spread this technology to all units in this simulated agent.

3 A DIGITAL INFORMATION AND WIRELESS COMMUNICATIONS TECHNOLOGY DESIGN OF EWL

3.1 Digital Information Technology-Prologue of the Web of the Electronic Working Logs for duty in Agent

The Web of the EWL-The details description corresponding to the Digital Information and Wireless Communications Technology based design Electronic Working Logs for duty was shown in the panel of the EWL. First of all, users should submit the personal identify of the username and password with the authorization passwords to get in the main system. Figure 1 shows the floating chat of Input and Platform of the Web of the EWL in main system. Figure 2 shows the real photograph of the system.

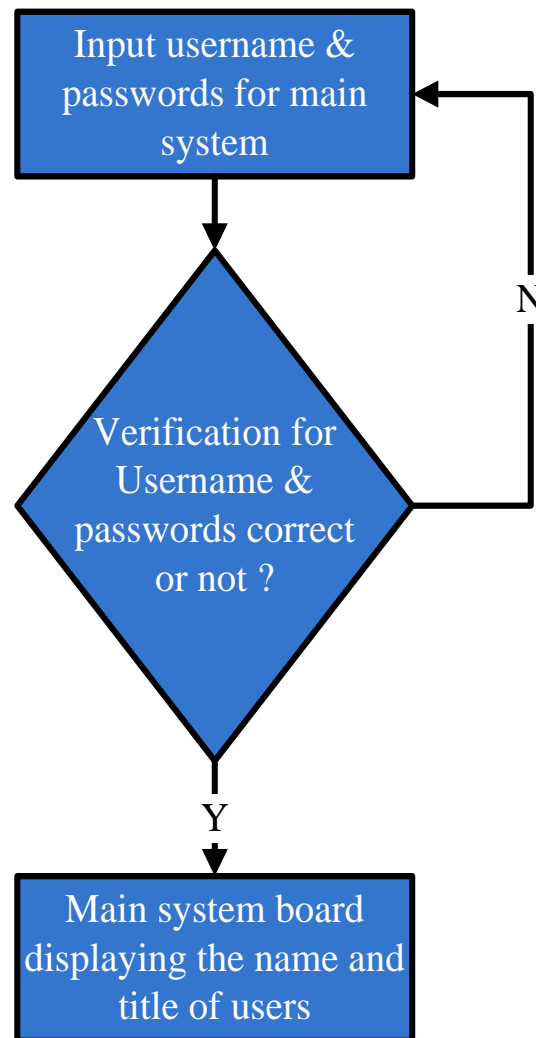


Figure 1. Floating chat of Input and Platform of the Web of the EWL in main system



Figure 2. The real photograph of the system

Information Management Catalog Introduction-

There are several icons shown in the Digital Information and Wireless Communications Technology based design EWL with different colors to make a difference, such as “Date”, “Time” “Duty item”, “Action signal of Y/N”, “Officer name”, “Status of T/C”, “Edition”, “Officer signature”, “People Signature”, “Acknowledge”, “Delete”, “Legal case description” and “Verification”.

3.2 Wireless Communications Technology-the Operation of the Management System of Electronic Working Logs for duty in Agent

3.2.1 Wireless Communications Technology as to Operation Description-Acquirement Interface

There are some main items in the Digital Information and Wireless Communications Technology based design EWL as to the “Verification”, “Adding a new working log for duty”, “Acquirement”, “Output” and “Delete”. Users selected the information shown in the Web through the EWL panel, pressing the button of “Acquirement” to execute the mission of checking and/or editing, then the following message with different colors icons corresponding to the message of “Date”, “Time” “Duty item”, “Action signal of Y/N”, “Officer name”, “Status of T/C”, “Edition”, “Officer signature”, “People signature”, “Acknowledge”, “Delete”, “Legal case description” and “Verification” will be responded immediately. Users can easily check and confirm those messages shown in the web through the EWL panel. In addition, those different colors will discriminate the different status of the processing Legal events. Figure 3 shows the real photograph of users to get in the system of EWL. Figure 4 shows the Process of users within Acquirement function. Figure 5 shows the Process of users to get in the system of EWL executing the function of Adding a new job. Figure 6 shows the real photograph of users to get in the system of EWL executing the function of Adding a new working log for duty in agent.



Figure 3. The real photographs of users to get in the system of EWL

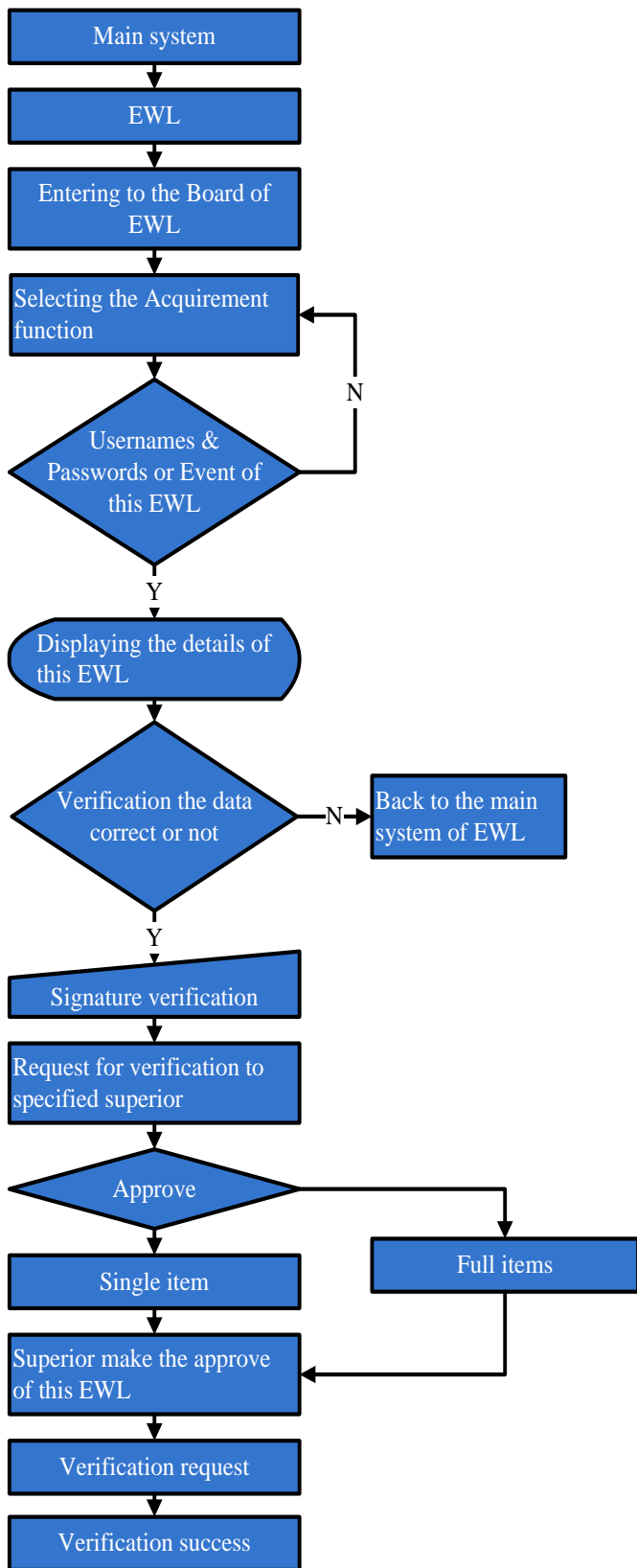


Figure 4. Process of users within Acquirement function

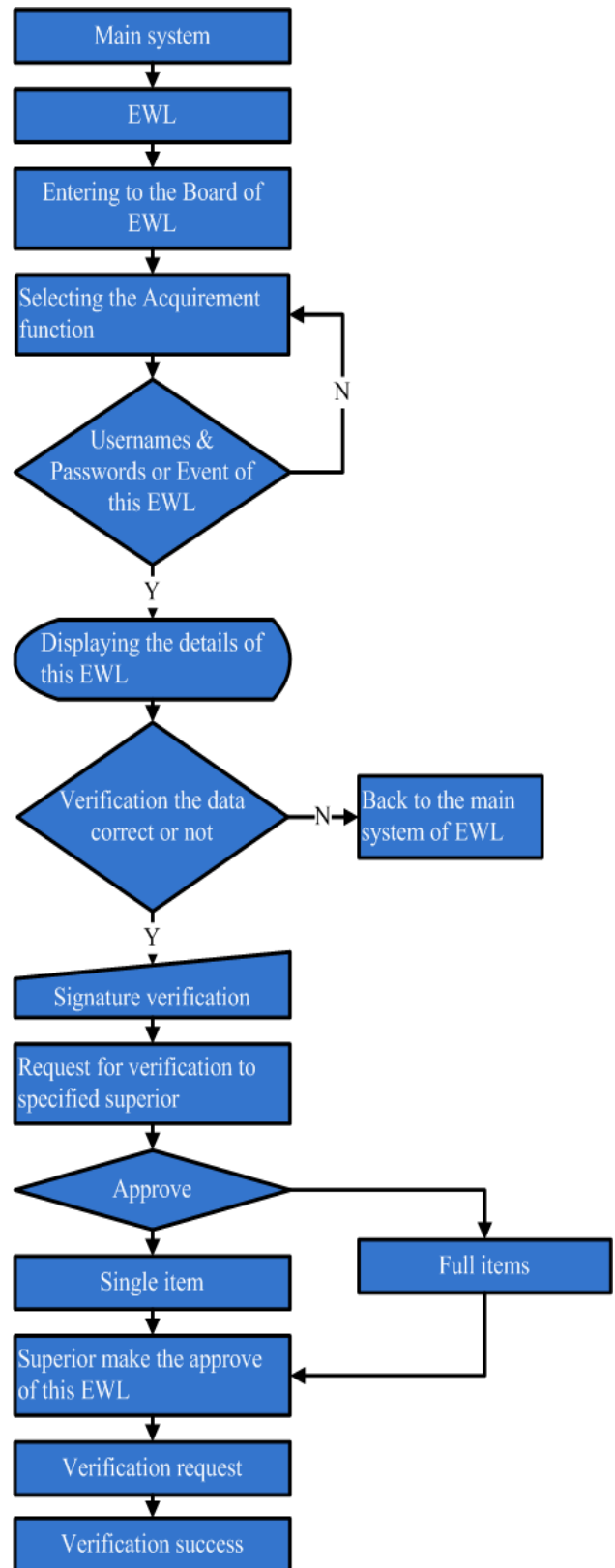


Figure 5. Process of EWL for users executing the function of Adding a new working log for duty



Figure 6. The real photograph of users get in the system of EWL executing the function of Adding a new working log for duty

- “Date”- officer should fill in the currently data exactly.
- “Time”-officer should fill in the currently time exactly.
- “Duty item”- officer should fill in the duty items, such as the Traffic affair or others.
- “Action signal of Y/N”- officer should fill in whether other Legal Affairs are existed and being proceeded.
- “Officer name”-officers should fill in officer’s name.
- “Status of T/C”- officers should fill in the status of Temperately Record or Completely this event.

- “Edition”- officers can modify the message of the execution legal event before “Output”.
- “Officer Signature”- officers should sign the officer’s name to identify.
- “People signature”- officers should acknowledge the people who involve the legal event to make a signature.
- “Acknowledge”- officers should acknowledge the output command of this legal event to the Supervisor for Verification.
- “Delete”- officers can delete this legal event with certainly reason descriptions and others.
- “Legal case description”- officers should describe the details or make a brief description of the execution task.
- “Verification”- officers should verify this event to output.

3.3 Digital Information and Wireless Communications Technology Process Description

Pressing the Panel command of the Digital Information and Wireless Communications Technology based design EWL “Adding a new working log for duty” to execute the Adding. The following steps should be completed.

- i) Officers should fill in the exactly currently date and time. In addition, those data were beginning as the legal event occurred.
- ii) Once other officers join this event, others should also fill in the corresponding names and ID number through the EWL panel. Finally, push the button of “Adding” . Moreover, officers won’t join this task due to urgent cases occurred beyond the officer controls. The officer can just push the button of “Delete” .
- iii) Other Legal Events item was employed to handle the corresponding legal events. The icon as to the “Y” represents the fact that there are existed other events should be handled. Officers should type the exactly the numbers of people and the details of the event. Otherwise, the icon presents “N” .
- iv) The process of the working logs is stated below. Users can also employ the corresponding phase words built-in the EWL memory for edition. Also,

users can type words directly through the EWL panel.

Finally, **“Adding a new working log for duty”** is completely executed. Users can also make some other “Adding”, “Delete” or make a modification of the previous job. However, the proposed EWL will respond the executed results through the screen of the panel, such as the corresponding message of “Adding Success” or “Delete Success”, “Verification Success”, “Output Success” ... etc. Once this action is not completed owing to some other typing errors or data losses, EWL will request the users to make a modification of the precious stage. It should be noticed that every action need be verified by the officers “Signature” as well as the People “Signature” before this Legal event was transferred to the Supervisor for Verification. However, if users are in temporary record for an executing duty of a EWL, she and/or he may employ the temporary register in the Digital Information and Wireless Communications Technology based design EWL. Figure 7 shows the process of the Status of users within Temporary Register.

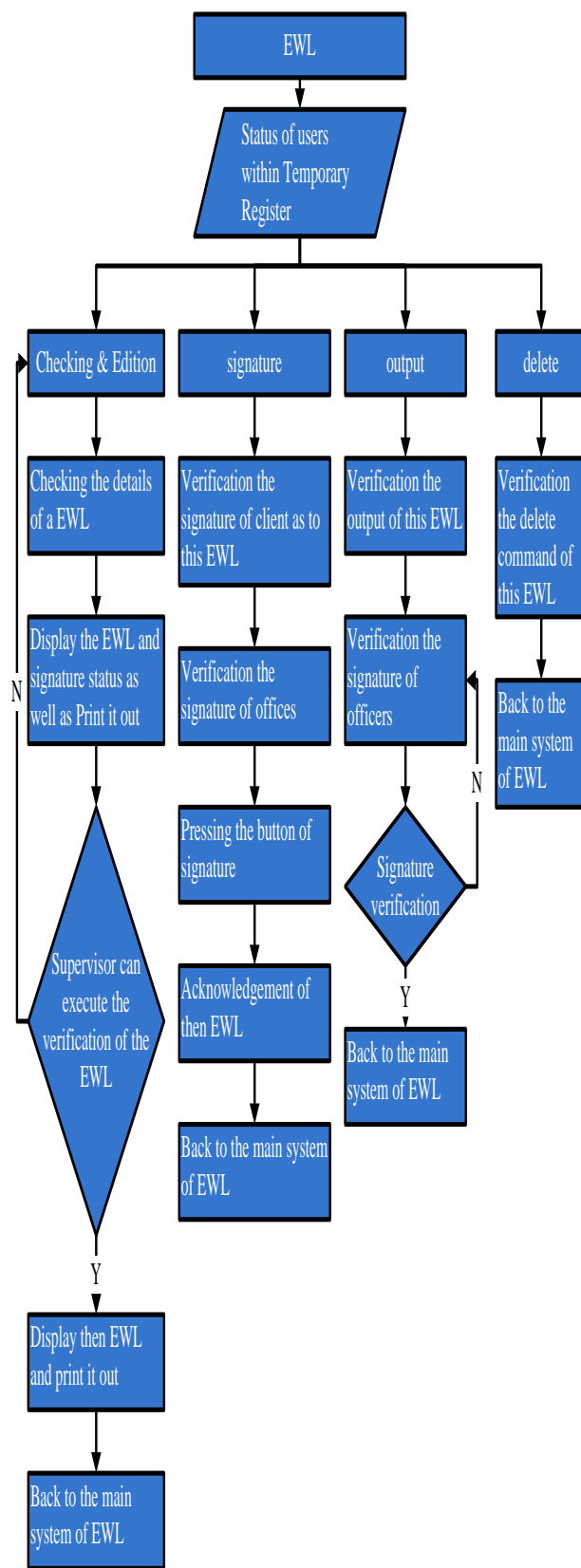


Figure 7. Process of the Status of users within Temporary Register

Figure 8 shows the real photographs of users to get in the system of EWL executing the function of Acquirement. Figure 9 shows the real photograph of users to get in the system of EWL executing the function of Signature. Figure 10 shows the Process of users within Output function. Figure 11 shows the real photograph of users to get in the system of EWL executing the function of Output. Figure 12 shows the real photograph of users gets in the system of EWL executing the function of Verification.

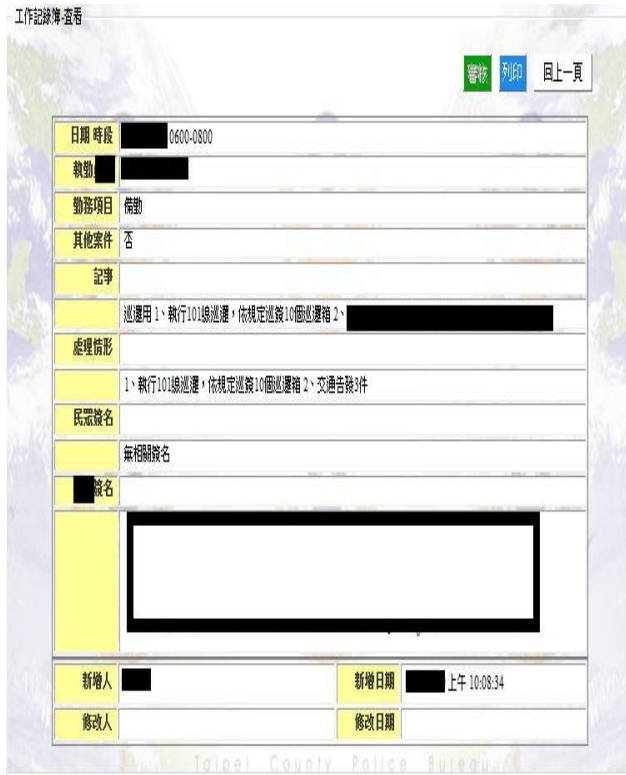


Figure 8. The real photograph of users to gets in the system of EWL executing the function of Acquirement



Figure 9. The real photograph of users to get in the system of EWL executing the function of Signature

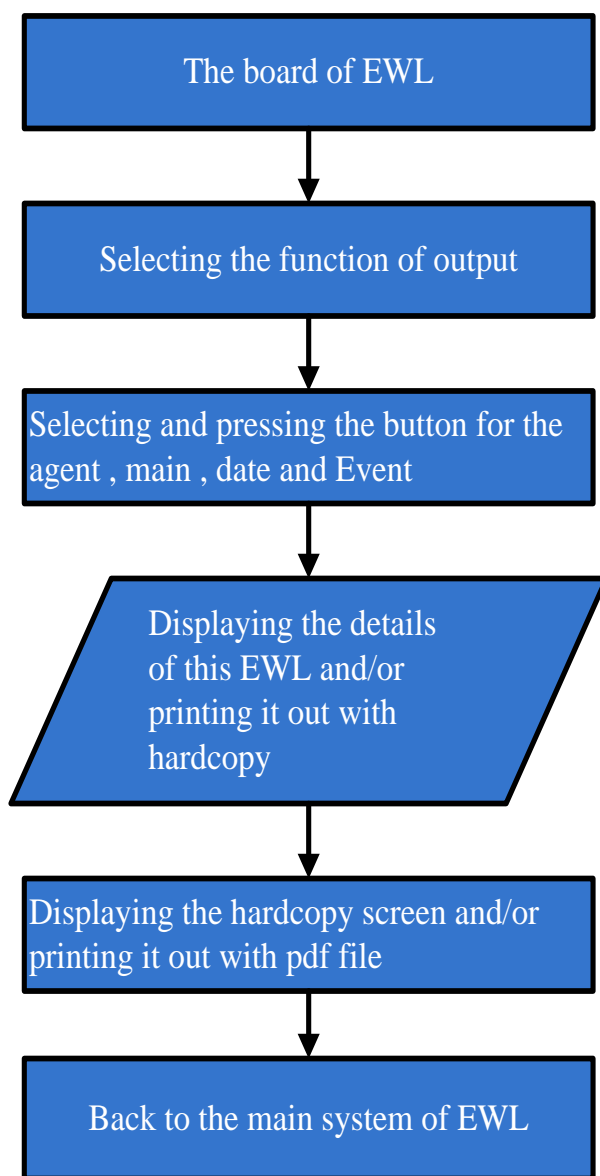


Figure 10. Process of users within Output function

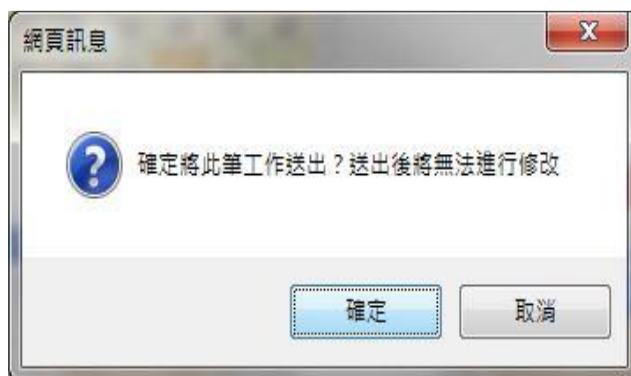


Figure 11. The real photograph of users to get in the system of EWL executing the function of Output



Figure 12. The real photograph of users gets in the system of EWL executing the function of Verification

3.4 Operation Description- Edition, Delete, Officers and People Signature, Output, Verification, Export

The panel of EWL will present the corresponding phase of icons with different colors of “Date”, “Time”, “Items”, “Other Events”, “Edition”, “Delete”, “Temperately Records”, “Officers and People Signature”, “Output” and “Verification” guild users to operate.

Once this action is not completed owing to some other reasons of typing errors or data losses, EWL will request the users to make a modification of precious stage. It should be noticed that every action need be verified by the officers “Signature” before outputting this Legal event to the Supervisor for “Verification”. Details are stated below.

“Temperately Record”- Users can execute the “Edition”, “Signature” and “Delete”. However, once this legal event was executed completely though the “Output Command”. Users cannot make any other modification of this case. Once there existed some other reasons of typing errors or data losses, EWL will request the users to make a modification of this precious stage.

“Verification”-the supervisor with the authorization executed the Verification Command.

“Colors Discrimination”- Different Colors type of icons discriminated the different items job of EWL.

“Output Command”- officers can print it out of this handled Legal event through the printer and output this job to Supervisor for “Verification”. However, every handled casd should be notified by Officer and People’s Signature for recognition.

4 APPLICATIONS

4.1 A Real Agent is selected to simulate the practical operation of Digital Information and Wireless Communications Technology based design Electronic Working Logs for duty in Agent

There are three algorithmic stages to promote this Electronic Working Logs for duty.

4.1.1 Algorithmic Stages

A-Stage 1. First of all, 20 sets of facility as to these signature panels and the corresponding devices are gained to execute the Digital Information and Wireless Communications Technology based design the Electronic/Network EWL. There are seven units in this agent to execute this Electronic Working Logs for duty.

A-Stage 2. There are 222 sets of facility as to the signature panels and the corresponding devices are gained to carry out the Digital Information and Wireless Communications Technology based design the Electronic/Network EWL for duty. There increase *nine units* more with respect to the previous Stage of *seven units* in this agent to execute this Electronic Working Logs for duty.

A-Stage 3. There are 300 sets of facility as to the signature panels and the corresponding devices are gained to execute the Digital Information and Wireless Communications Technology based design the Electronic/Network EWL for duty. All units in this Agent are invited to join this Project to execute this Electronic Working Logs for duty.

4.2 Performance Evaluation of the proposed the Digital Information and Wireless Communications Technology based Electronic Working Logs for duty

The performance of this Digital Information and Wireless Communications Technology based

design Electronic Working Logs for duty in agent is stated below.

-E-performance, Electronic/Network EWL for duty concept substitutes the tradition hardcopy of paper working logs.

-Time and Space saving, this dedicated Digital Information and Wireless Communications Technology based design of Electronic Working Logs for duty is certainly superior with respect to the precious hardcopy working logs owing to time consumption and space consumption.

-Economy efficiency, the tradition working logs cost more than this dedicated design of Electronic Working Logs for duty.

-Forever preservation, agent can conserve the electronic working logs forever due to the EWL.

-Justification, officers can clearly and promptly investigate and/or check every past case of the corresponding message through the dedicated Digital Information and Wireless Communications Technology based design of Electronic Working Logs for duty.

5 CONCLUSIONS

This paper engrossed on the inconvenience of the traditional hardcopy working logs sheets used in officers in agent, proposing a Digital Information and Wireless Communications Technology based design of a Noble Design of Electronic Working Logs (EWL) for duty in agent. Furthermore, this paper also employed this dedicated tool to a real agent. There are some special features in this paper: i) Easily operational interface, users as well as officers and superiors can simply and instantly inquire the on-line request of the EWL; ii) Instantaneously monitor the situation, supervisors can clearly scrutinize the events; iii) Forever preservation, agent can conserve the electronic working logs forever due to the EWL. In addition, this paper also created a real Digital Information and Wireless Communications Technology based design of an EWL and implemented the proposed EWL in a real officer agent and obtains the following successful results: E-performance, Electronic/network EWL, Time and space saving, Economy efficiency, forever preservation, and Justification obtained for the implemented agent.

ACKNOWLEDGMENT

This work is supported in part by the Ministry of the Science and Technology of the Republic of Taiwan under Contract MOST 103-2221-E-129-005.

REFERENCES

- [1] L.-T Liu, "The Research of dealing with the report of E-Platorm and service quality," S cinnction-To use as an example for Taipei County Government Police Bureau, vol. 1, no. 1, pp. 7-20, 2006.
- [2] J.Y Kuo, "Topic Form System of Staff's Attendance in Taipei City Fire Department-Perspective From," Unified Theory of Acceptance and Use of Technolgy, vol. 1, pp. 1-2, 2011.
- [3] B.-J Tai, "Empirical study on the Relationship between e-process Practices and Performance Improvement in the Software Development," Technology, vol. 1, pp. 6-14, 2004.
- [4] U.-J Jeng, "The Study on the Degree of User Satisfaction for the e-Workflow System," Technology, vol. 1, pp.1-7, 2014.
- [5] A. P. Balutis, "Monitoring the E-Government Revolution," Technology, vol. 27, Issue1, 1996.
- [6] Adelina Tang, "Towards the Use of a Computing Ontology: A Curricula Management System Proposal," IJDIWC,The Society of Digital Information and Wireless Communications, pp. 100-101, 2011.
- [7] Boonsit Yimwadsa na,Chalalai Chaihirunkarn,Apichaya Jai choom,Apichaya Thawornchak, "DocFlow: An Integrated Document Workflow for Business Process Management," IJDIWC, The Society of Digital Information and Wireless Communications, pp. 222, 2011.
- [8] Juan Carlos López Pimentel,Víctor Fernando Ramos Fon Bon, Raúl Monroy, "A Web Service for Signing and Authenticating Digital Documents based on Symmetric Cryptography Protocol," IJDIWC,The Society of Digital Information and Wireless Communications, pp.4 40-442, 2011.
- [9] Sattar J Aboud,Sufian Yousef, "A PRACTICAL PROXY SIGNATURE SCHEME," IJDIWC,The Society of Digital Information and Wireless Communications, pp. 297-298, 2012.
- [10] AmrBadr-El-Din, "Object-Oriented in Organization Management: Organic Organization," IJDIWC,The Society of Digital Information and Wireless Communications, pp. 441-442, 2013.
- [11] Niloofar Khanghahi,Ramin Nasiri,Mahsa Razavi, "A New Approach Towards Integrated Cloud Computing Architecture," IJDIWC,The Society of Digital

- Information and Wireless Communications, pp. 24-30, 2014.
- [12] Ahmad Mosallanejad, Rodziah Atan, "Masrah Azmi Murad, Rusli Abdullah," A Hierarchical Self-Healing SLA for Cloud Computing," IJDIWC, The Society of Digital Information and Wireless Communications, pp. 43, 2014.
- [13] Thamilvaani Arvaree @ Alvar and Associate Prof. Dr. Rodziah Atan, "SERVICE AVAILABILITY AND ACCESSIBILITY OF REQUIREMENTS USING CLUSTERING IN CLOUD ENVIRONMENT," IJNCAA, The Society of Digital Information and Wireless Communications, pp. 457-460, 2011.
- [14] Kenichi Takahashi, Takanori Matsuzaki, Tsunenori Mine, Takao Kawamura, Kazunori Sugahara, "Protection of Personal Information based on User Preference," IJNCAA, The Society of Digital Information and Wireless Communications, (ISSN:2220-9085), pp.800-801, 2011.
- [15] Ali A. Yassin, Hikmat Z. Neima, Haider Sh. Hashim, "Security and Integrity of Data in Cloud Computing Based on Feature Extraction of Handwriting Signature," IJCSD, The Society of Digital Information and Wireless Communications, (ISSN:2305-0012), pp.93, 2014.
- [16] Information on: the Executive Yuan: Digital Learning National Technique Plan, Taiwan, pp. 3560-3470, 2013.
- [17] C. S. Lin, "The Design and Implementation of Network Learning Environment," Information and Education Magazine, vol. 67, pp. 34-40, 1997.
- [18] M. Reid: "Strength and conditioning in tennis Current research and practice," Journal of Science and Medicine in Sport, vol. 11, pp. 248-256, 2008.
- [19] D. Karahoca, "Roles of teachers in e-learning How to engage students & how to get free e-learning and the future," Procedia Social and Behavioral Sciences, vol. 2, pp. 5775-5781, 2010.
- [20] H. J. Chen, "Linking employees' e-learning system use to their overall job outcomes," An empirical study based on the IS success model, Computers & Education vol. 55, pp. 1628-1534, 2010.
- [21] A. G. Dehkordi, "The effect of instructional-aid films on learning of table tennis techniques," Procedia Social and Behavioral Sciences vol. 15, pp. 1656-1662, 2011.
- [22] T. F. Wu, S. L. Fan and B. S. Chang: "The Policy to Construct the Middle-High School e-Learning Environment," A Competition Perspective. Education Data and Research, vol. 54, pp. 88-95, 2003.
- [23] R. Hwung, "Development Strategy of Campus e-Learning," Teacher Word, vol. 179, pp. 26-33, 2004.
- [24] S. B. Chang, N. H. Lyau, Y. J. Lee, W. T. Chen, H. W. Jyan and W. Y. Wang, "A Research of the Promotion of e-Learning in Lying-Tung Technique University," Tech. Report, The Department of Commercial Technique Management of Lying-Tung Technique University, pp. 569-577, 2007.
- [25] Information on: Encyclopedia American Online <http://ea.grolier.com>.
- [26] C. Defa, "Information Security in E-learning Platforms," Social and Behavioral Sciences, vol. 15, pp. 2689-2697, 2011.
- [27] K. Dilek, "Roles Of Teachers In E-Learning: How To Engage Students & How To Get Free E-Learning and the Future Procedia," Social and Behavioral Sciences, vol. 2, pp. 5775-5783, 2010.
- [28] J. Iskra, J. Gasilervski, J. Hyjek, R. Zajac and M. P. Dyja, "Teaching Methods in Hurdle Races and Results in Special Field and Laboratory Tests," Academy of Physical Education in Katowice, pp. 41-48, 2012.
- [29] S. Lee, G.-J. Nam, J. Chae, H. Kimn and A. J. Drake, "Two-dimensional position detection system with MEMS accelerometers, readout circuitry, and microprocessor for padless mouse applications," IEEE Transactions on Very Large Scale Integration (VLSI) Systems, pp. 347-355, 2005.
- [30] M. Betke, J. Gips and P. Fleming, "The Camera Mouse: visual tracking of body features to provide computer access for people with severe disabilities," IEEE Transactions on Rehabilitation Engineering Neural Systems and Rehabilitation Engineering, pp. 236, 2002.
- [31] T. Itou, Terao M., J. Nagata and M. Yoshida, "Mouse cursor control system using EMG," Proceedings of the 23rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, pp. 598, 2001.
- [32] C. Dagli and A. Kusiak, "Intelligent system in design and manufacturing," ASME press, pp. 986, 1994.
- [33] C. W. Siliva and R. Shoureshi, "Intelligent control system," ASME, pp. 8796, 1993.
- [34] L. S. Chen, "Step Motor theory and Application," Jeng Shing Book Store, pp. 873, 1991.
- [35] P. J. Antsaklis and K. M. Passino, "An introduction to intelligent and autonomous control," Kluwer Academic Publishers, pp. 9843, 1993.
- [36] F. L. Chen, T. Y. Ou., Grey, "Relation analysis and multilayer function link network sales forecasting model for perishable food in convenience store," Expert Systems with Application, vol. 36, pp. 7054-7063, 2009.
- [37] O. G. Ali, S. Sayin, T. Woensel and J. Fransoo, "SKU demand forecasting in the presence of promotions," Expert Systems with Application, vol. 36, pp. 12340-12348, 2009.
- [38] A. Allen, "Fashion retail forecasting by evolutionary neural networks," Journal of Production Economics, vol. 114, pp. 615-630, 2011.

- [39] S. T. Huang, N. H. Chiu and L. W. Chen, "Integration of grey relational analysis with genetic algorithm for software effort estimation," *European Journal of Operational Research*, vol. 188, pp. 898-909, 2008.
- [40] D. Karahoca, "Roles of teachers in e-learning: How to engage students & how to get free e-learning and the future," *Procedia Social and Behavioral Sciences*, vol. 2, pp. 5775-5783, 2010.
- [41] H. J. Chen, "Linking employees' e-learning system use to their overall job outcomes: An empirical study based on the IS success model," *Computers & Education*, vol. 55, pp. 1628-1634, 2010.
- [42] A. G. Dehkordi, "The effect of instructional-aid films on learning of table tennis techniques," *Procedia Social and Behavioral Sciences*, vol. 15, pp. 1656-1664, 2011.