The improvement of the car accident dealing process of Hsin-Chu traffic division

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Abstract

The process of car accident is always lengthy and annoying. Therefore, the goal of our project is to improve the efficiency of the police handling car accident cases through building a network platform. Furthermore, combined with online drawing traffic accident scene mapping system, our web provided better assistance for the police. Finally, the police is glad to see this improvement and hope we could realize it.

Keyword: Logistics model; Information system; E-Enterprise integration.
1. Introduction

1.1 Problem

According to National Police Agency statistics, the number of road traffic accidents was up to 249,465 cases (683.47 / day) in 2012. The cases left to be dealt by the police a day were abundant. However, subsequent data processing is even more complicated. The police need to do the same processing steps such as: fill paper data, transform the paper data to electronic files to store in the computer repeatedly. As a result, it costs a lot of time and paper.

1.2 Scope

Nowadays, due to the awareness of the simultaneous data updated, we want to make a more efficient process for the police to deal with a car accident. The process of car accident dealing process for police is from litigant call until the complete data is built. A schematic flow chart shows as Figure 1.

![Schematic flow chart.](image)

1.3 Purpose

The main purpose of the paper was to decrease the process time and waiting time of car accidents dealing process. Moreover, after the interview with the police, we found that there is another thing which could be improved in the dealing process – the paper works. Since the Hsin-Chu traffic division should keep the record of each case (in the form of paper reports) for 5 years, it leads to lots of paper stacking and waste. We would like to achieve the goal of electronization and data digitalization by introducing other electronic devices to the dealing process. So the final purpose of this paper is to decrease the paper and time consumed.

2. Model display and analysis

This section informs about the display of logistic provider containing As-Is model, To-Be model, organization model and object model. Each model would be illustrated individual and displayed via INCOME.
2.1 AS-IS Behavior model

Our As-Is behavior model is shown in Figure 2 and Figure 3. The beginning of the process started from a call. After the 110 switchboard picking up the phone, he/she will ask the informant and leave the brief information of the scene, and then the rough information will be passed to the police to build a detail profile. In this case, Hsin-Chu Traffic division is responsible for all the cases happened in this count, so the time spent to reach the scene is ranged from 1 to 30 minutes. There are 5 main tasks should be done in the accident scene, including scene investigating, photo taking, scene drawing, relationship interviewing and scene cleaning up, and each step costs 5 to 10 minutes to be done. In the final phase of the dealing process, the police need to clean up the scene and go back to the office, complete the drawing task to build a detailed record. The process above is our AS-IS model and it is drawn as the figure shown below.

Fig. 2. Level 1 AS-IS behavior model.
2.2 To-Be Behavior model

By bringing iPad and data digitalization into practice, we expect that we could omit the time spent on keying data and scanning the paper works, that is, the “Traffic police draw and upload the data” step of the dealing process. In terms of on-site treatment and scene data collecting, if we could load the map information into mobile devices, the police will be able to draw detail scene pictures. Moreover, configuration settings of the same intersection are no longer needed, and scene data could be uploaded simultaneously. On the above basis, we know that we could save $Y$ working hours in each case, meaning that we could save $W$ working hours per year. To sum up, the introduction of iPad and ECAS System would affect the accident dealing process positively no matter we discuss the issue on the point of decreasing operation cost or consumptive material.

Fig. 4. Level 1 TO-BE behavior model.
3. Organization model

Figure 6 presents our Organization Model. In our case study, we just discuss two departments under the National Police Agency, namely Traffic division and Local police office. Another unit in our Organization Model is 110. We put 110 in our model because we think that it plays an important role in our system.

The task of the 110 is to pick up the litigant’s call and give the appropriate and immediate response, than it passes the information for who need it, such like the hospital, local police office, and local traffic division. Local police office is responsible for maintaining traffic and preventing a second accident. And The Traffic division usually deals with the evidence collection and records.
4. **Object model**

4.1 **AS-IS Object model**

The analysis chart and scene photos will be uploaded in the end of the car accident dealing process. If there is any litigant who wants to get the detailed data, they have to fill the application sheet.

The analysis chart contains the data from 110 and the conversation record. Conversation record includes the litigant registration sheet and applicant’s signature. Besides, accident scene and scene photograph includes the scene sketch, scene photography, on-site treatment abstract and police station information.

5. **System Design Implementation**

According to our to-be model and object model, we want to establish a network platform for police to update information simultaneously when handling the case and reduce the redundant work.

There are two entrances in our website, which are for the police and the public respectively. The police can handle cases rapidly and update data through our system, while the public can use this system to inquiry cases status and apply data. In addition, we provide the online drawing traffic accident scene mapping system. It not only can draw the scene immediately, but also can reduce the wasting of the paper. Therefore, we establish a prototype which is web-based by Visual Studio 2008.

![Home page.](image)

The marquee shows some information for the public.

**Fig. 7.** Home page.
3.2 Public Interface

The public also need to key the account and the password to enter our system. After entering our system, the public can browse the cases, which he or she involved in. Following will take case2 to illustrate each step.

1. Enter the user account and password. Then, confirm the identity.

**Fig. 8. Login page for the public.**

2. The public could browse the cases which he or her involved in.

**Fig. 9. Select case.**
Entering Case1, the public can click “magnifying glass” to view report information, site photographs, conversation record, traffic accident scene and preliminary judged analysis.

**Fig. 10.** Case query system detail.
The public simply click the "I want to download", then the interface will jump to the application screen. Because the police already have the case litigants’ information, the litigant can just click "自動填入". Then, the system will fill in the litigant profile automatically.

At last, click "確認送出", the application will store in the SQL database immediately and wait for the police to handle.

Fig. 11. Case application form.
3.1 Police Interface

**Fig. 12.** Login page for the police.

![Login page for the police]

Enter the police account and password.

Dear 9834012

歡迎您登入案件查詢系統
以下有幾筆尚未處理的案件：

| 案件編號 | 報案人 | 報案電話 | 案件地點 | 報案時間 | 處理| | --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- |
| 003 | 資質 | 9834012 | 新竹市富安街廣場 | 2013/12/29 上午 01:50:39 | 處理案件 | 
| 004 | 勞力 | 925252522 | 新竹市區環 | 2013/12/29 下午 16:25:25 | 處理案件 |
| 005 | 王不嘶 | 94479879 | 新竹市科學廣區大門 | 2013/12/29 下午 17:26:38 | 處理案件 |

Dear 9834012

歡迎您登入案件查詢系統
您正在處理003案件資料：

**Step 1: 上傳報案資訊，**

![Step 1 for uploading]

Step 1 is to upload the 報案資訊.
The police just need to press “上傳”.

**Fig. 13.** Case processing - uploading.

**Fig. 14.** Step1 for uploading.
Step 2 is to upload the litigant data. The police need to key the litigant ID and press “確認上傳”.

Fig. 15. Step2 for uploading.

Step 3 is to upload the conversation record. The police need to select the file and press “上傳”.

Fig. 16. Step3 for uploading.

Step 4 is to upload the scene photos. The police need to select the file and press “上傳”.

Fig. 17. Step4 for uploading.

Step 5 is to upload the scene sketch. The police need to select the file and press “上傳”.

Fig. 18. Step5 for uploading.
Dear 9834012

Step 6 is to upload the on-site treatment abstract. The police need to select the file and press “上傳”.

Fig. 19. Step6 for uploading.

Dear 9834012

After all files have been uploaded, the system would show that ”資料已更新成功”.

Fig. 20. Information has been updated successfully.
The police could browse the case profile in “查看已處理案件” and public application in “查看民眾申請”.

**Fig. 21.** View case which has processed.
Online drawing traffic accident scene mapping system has already set the present roadmap, the police can draw the picture by moving the car A, car B, bus, bicycle, zebra crossing and function arrows.

Press “print”, then the picture could be saved in the system.

**Fig. 22.** Online drawing traffic accident scene mapping system.
6. Conclusion

Nowadays, the speed of information flow is extremely needed since the characteristic of internet itself, thus, the integration of enterprise and Ethernet is necessary.

We committed to enhance the efficiency of police operations, reduce unnecessary operations, increase the convenience of both police and reached a preliminary goal of the semester by creating a website in our project. The outcome of recent stage could be summarized into following three points: First, in terms of enhancing the efficiency of police operations, we use online mapping system to improve the efficiency of the police field operations and omit subsequent drawing up action. Second, to enhance public convenience, we use the portal website to provide a way for the public to inquire and apply for data needed, so that people don’t need to visit the police station on their own. Third, to enhance the convenience of the people, while the portal also enhance police operations and data retention convenience, in the past the police have retained a lot of the information site on paper, not only a waste of resources, but also makes the operating procedures increasingly burdensome.

Still, there are numerous future works left to be done. First of all is to confirm the information security of the system since the E-Case system includes the private data of the public which could be used to claim for compensation and should be preserved by the police. So we know of the database is easily hacked, the result would be severely bad. Secondly, we could integrate the information flow of the police and the National Police Agency because the police need to send case data to the National Police Agency due to the annual performance appraisal. Based on the above, if we could solve the problem resulted from the concern of information security, the value of this project would be promoted.

To sum up, through the introduction of the E-Case system, we hope to highly integrate the organization information and the internet and to comprehensively improve the quality of the input and outcome of the car accident dealing process. In the process of project development, we found that the police are also willing to see the implementation of our project in the future. Therefore, it would be a major step in service innovation if the E-Case system could go online in future days.

Acknowledgment

This research was partially supported by the Hsin-chu City Police Bureau Traffic division. The authors express their appreciation to police Chun Wai Chen and team leader Kuo-Feng Huang for sharing the current situation of handling car accidents and data needed to validate this research. The authors are extremely grateful for the participants’ valuable comments.
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