

Incident Reporting System for EHS Division

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Abstract

In today's world, every company has a variety of report's needs, especially incident reporting system is needed when there is an incident around the company. This sometimes is very difficult to do incident administration until employee right is forgotten to get treatment. Such misunderstanding are: incident report form is not printed, incident report form is gone, thus making it difficult to complete the previously stated needs. In other words, some companies do not have the capabilities to manage and develop their manual system to new generation, being automatic system. It means cannot give time cost if any, activities is done by automatically system. This in fact can be solved, if their problem, including time management activities is recorded in good condition and details.

This program is designed to facilitate each person around environment, health and safety department in managing their incident in conclusion and graph on a periodic basis. The uniqueness of this program is accessible to everyone in any position as long include positions are pointed by environment, health and safety admin without using form paper but using desktop application which can be used around the company.

Keywords—incident reporting system, health and safety application

1. INTRODUCTION

Today's knowledge and technology development are increasing and modernity in any effective features is used. Thereby, the development will have many significant changes of life aspects, especially in Industry sector. In other side, the external industry also is growing rapidly coincide with an industry technology improvement, getting higher the technology to be used, also getting higher the risk to be faced. If the risk possibility is not good in handling, it may cause work-accident.

By the rapid development, job opportunity expansion and quality utility and labor protection are the main policy which covering all sectors. It means that job opportunities and labor protection are an important part of all development policies. In fact that speed of advanced technology using for economy and industry sector brings increasing number, types and intensity safety sources.

According to employee protection, the government has released policies and regulations, such as:

- Undang-Undang Nomor 1 Tahun 1970 tentang Keselamatan Kerja.
- Undang-Undang Nomor 4 Tahun 1969 tentang Ketentuan Pokok Mengenai Tenaga Kerja
- Undang-Undang Nomor 13 Tahun 2003 tentang Ketenagakerjaan.
- Peraturan Menteri Tenaga Kerja Nomor 05/MEN/1996 mengenai Sistem Management Keselamatan dan Kesehatan Kerja.
- Peraturan Menteri Tenaga Kerja RI No. Per-03/MEN/1998 tentang Tata Cara Pelaporan dan Pemeriksaan Kecelakaan

Compliance assurance is the absolute department of each multinational company. That department has assigned to do auditing according the rules. The rules are international rules and national rules. Inside compliance assurance department, there is an EHS division. EHS stands for Environment,

Health, and Safety. That division has function to manage about environment, health, and safety around company. The division organizes little incident until a big incident in environment, health, and safety.

That division has roles to manage and monitor the implementation of environmental, health, and safety as well as its compliance with applicable regulation and other requirement. The environment has role to manage hazardous waste handling, to avoid environmental pollution and contamination. EHS has other roles in creating an emergency response plan, waste handling, industrial hygiene, etc. Health has role to manage what is standardization of food for employee, what medical employee should do for the victim, what feedback will be given to victim about this incident. The safe has role to manage employee safety around the working area. What safety tools are used to do dangerous activity, what first aid when around working area is dangerous.

Incident investigation is analysis and prediction for the accident, according to accurate research result by all information and accident factor. PT. X Indonesia as multinational company which still using manual incident enrollment by saving the database in Excel office form. By using Excel, it may give threats to the company in terms of no limit access to employee to read the data. Most employees when filled admission form still gives null value without any warnings like message warning. Usually medical employees do not want to report their time to know, how fast the patient gets help from medical and how long medical division can spread the report to supervisors and EHS team. For supervisor, how long the supervisor can access the reports and report to the EHS team to verify.

Many companies spend a lot of papers just to make a report or administrative needs. Although the company determines regulation in terms of paper using, the employees still breaks the rule. The reason why the employees spend much paper is simple, they cannot operate the system, they do not know what will they do to troubleshoot the problem, and what application should they have to make safety powerful and helpful.

According the function of each division, the health division has role to minimize in using a paper document by developing the system. That division has been using manual paper for admission filling incident document. This is for collecting the report data, monthly report or yearly report. The assignment is very responsible and needed to keep, the data consists confidential data based on giving rules. The first thing, if the employee gets incident, they should report to a leader or supervisor for their division area working. Then the leaders have report to medical that there is a patient in their division. After that, the patient should be going to the clinic, to get first aid from medical division. After the victim gets first aid, medical division starts with their investigation. First of all medical divisions gives the paper form filled by the patient.

That form's content is about personal identity, how the incident can be, what body part has been injured, what treatment has the patient gotten. After the patient does admission filing the document, the paper will be collected as the database for medical. Then medical make the report for another leader with do repetition, with fill that form into word office form. It is done for giving information to other leaders, and report to EHS since the incident is happening. By email the report is sent, whereas medical division also makes copying the admission filling with copy in the database is given one by one.

After getting noticed, the incident form sends by email and medical form has been filled by medical division, then the leader or supervisor do admission filing the incident document. The form's content about how to fix a damaged equipment, give the reason about that incident is happening because equipment factory, or human factor, or because not safety factor. After that the supervisor sends the form into EHS divisions for validation. EHS still using the manual database, after validate the form, they still input validation value in medical Excel database. All of steps should be taken by medical, supervisor, and EHS, because they still use a manual database and not strong form. The form cannot save the database form automatically; it still saves the database form manually. Other else the database, not safety of confidential data, because is saved just in Excel office. Therefore, it is necessary for the EHS division to have an application that can help medical division for admission filing the incident form document.

2. METHODOLOGY

This research use the RAD (Rapid Application Development) model to develop the application.

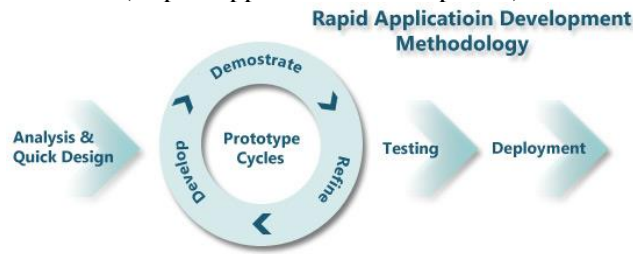


Figure 1.1 “Rapid Application Development Methodologies [3].”

Based on Figure 1.1, the RAD has four flows, it starts from an analysis and quick design, prototype cycles, testing, and deployment. All of flows have advantages in order to allow software to be written much faster, and it is easier to change requirements. The methodology is chosen because of the tight schedule of the project and the entire system of operation can be developed as software mechanism development that provides higher quality in less time. Therefore, by using the RAD model, the project would be more manageable for the time needed to build the application will be lessened.

The RAD model consists of six major phases:

Analysis and Quick Design

This phase allows the author to collect and gather all information needed, and then analyze the constraints and functionality of the application. Then make use case diagrams, swim lane diagrams, and sequence diagrams. It will be used to design the whole application

Build

This phase will be conducted using visual basic 2010 language.

Demonstrate

This phase is essential to demonstrate the application so that it will work properly or not. Bugs and error will be detected in this phase.

Refine

This phase is to fix bugs and error are detected when the demonstrate is doing.

Testing

This phase is last quality assurance without bug and error.

Deployment

This phase is the application is ready to be used.

3. RESULT AND DISCUSSION

The development of this research will be focused on how to create a desktop application using visual basic about incident reporting system application. This application can be accessed by all divisions where their computer has been integrated with company local area network.

The purpose to develop this application is to fill the accident form becoming much easier. The application can aid the user to know the incident that has been happened and data of the victim. The application will use the login area through register to super admin. User ID and password as identity for the super admin, administrator, medical user, supervisor user, and EHS user to log in and access according function of each user ID to fill that form.

System Overview

As shown that Figure 3.1, the application appears powerful with having processing access right via log in data. After logging in user should input data to user form. After importing data, the system will be

sent and querying data into the database server. After querying data, the data will be copied into the database logbook of the application. Then the database will give the queue reporting list for the next form. Then log out to close the application. Overall the system overview diagram can help to identify the flow of this incident reporting system. In this system also, based on that Figure 3.1, the flow is not confused to be learned by employee. Because this flow can be found in other database saving system. So this system overview is the first step to be planned before developing a system.

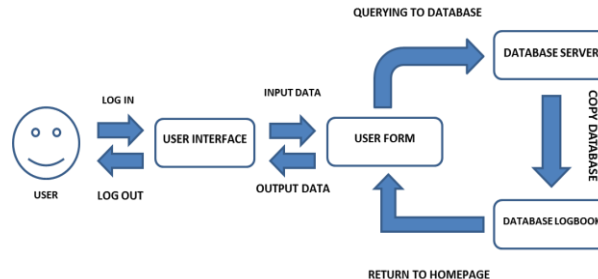


Figure 3.1 System Overview Diagram

System Design Overview

Create Account

Create account is the first step to fill the form in this application. To rich this access right, user has to register to super admin to get access right. Super admin will register new user for this application. First step, user have to submit their personal identification to super admin, and then super admin will determine what access right you get. Then after you have registered in the system, you will get the username and password. Both of them are used to log in into the system, and to ensure both of them have registered, your username and password will appear in data grid view of user registered since they have registered in the system.

For this log in, the system also include access right, depend on when the user registered by super admin. All the username and password fields must be filled by the user, then both of the fields have filled, the system will check the username and password in the database server. If both or one of them wrong, automatically the system will show a message box about an incorrect username or password, and all fields will be empty.

Validation

All fields in all forms have to fill, because when the data are submitted into the database server, the data that want to submit have to complete. If the data that want to submit do not complete, the system will show the message box and system will give focus to the empty field.

Waiting List System

The waiting list system is used for knowing if there is form had to fill. Without it, the next form cannot be filled by the next user, it means if there is no form list in data grid view, so there is no user fills the form medical.

Create Incident, Investigation, and Verification

Incident, investigation, and verification are main page to fill and each has functioned for incident reporting overall. The user has to fill all fields in those forms. When the data want to submit, the system will check the empty fields. If there is an empty field, the system will give the focus in the empty field.

System Integrate with Database

The expert system must be integrated with database server. With this advantage, user can save the data orderly according requirement needed. With this advantage also, the system can show data list for the form has been successfully saved in the database server.

Automatically Send Email

One of the uniqueness in this application is here. Because the system has to filled by three users, so the system must have requirement. One of requirement that is the next user who fills the form have to give information about that incident, so the user can know and soon to fill the concerned form.

Export Data to Excel

The data what the user has been saved should be reported. With this requirement so to make easy the user without insert the data one by one, so the system provides export to Excel feature. That feature can be exported the database in Excel format. So with this feature expected can help the user in makes the report.

User Interface

User interface is created to receive data which inserted by user to give some information about accident that happened to supervisor and from supervisor to EHS committee. This accident role reporting process from the system applies to all users. Whereas user interfaces for this system application include a way to interact between system application and system human, and this is called human computer interaction.

The interface design consists of some main part such as: Register Page is used to registered new user to access this system application. Login Page Super Admin is used to access register page. Login Page Administrator is used to access system application which is divided into three users medical, supervisor, and EHS committee. Home Page is used to show function button of three users. Medical Form Page is used to fill incident information. Supervisor form Page is used to fill incident investigation. EHS form Page is used to fill incident verification. Medical Database is used to put incident database. EHS Database is used to put all information from incident information, investigation, and verification.

Super Admin Login

As shown in Figure 3.2 below, this interface is used for super admin login to go register new user page the content of labels are username and password. For the textboxes are username text and password text. Those textboxes are filled by user. And each username and password textbox there is null validation, when user clicks login button. Next is the three buttons, those are exit button, reset button and login button. Exit button is used for finishing the application, reset button is used for making empty all textboxes. A login button is used for processing the next registration page if the data in both of the textboxes are true.



Figure 3.2 Login Page

Home Page



Figure 3.3 Home Page

As shown Figure 3.3, this interface is used when user have been successfully insert username and password in the login area. The first section in square is, there is a photo picture of the employee. There are labels are used as welcoming speech for user in their user name and user id. Also label of user access right. About list what user can does in this application. And the last button in the first section is logout button, logout button is used for finishing from access right in this application and back to login page.

The next section there is six buttons picture. Those are medical form button can used for opening medical form and this access right for medical division, supervisor form button can used for opening supervisor form page and this access right for supervisor of each division, EHS form button is used for opening EHS form page and this access right for EHS committee, medical database button is used for checking the database which have been saved in database server, and this page for medical and EHS access right, EHS database button is used for checking EHS all database and this access right just for EHS committee, report form button is used for reporting victim data and can print the data, and this is access right is used for medical division.

There are six labels also, they are medical form label, supervisor form label, EHS form label, medical database label, EHS database label, report label.

Medical Form Page

As shown Figure 3.4 this interface used for incident reporting there are more labels in this interface. They are time generate label, form no label, victim name label, id label, section label, leader name label, line label, age label, plant label, sex label, incident location label, and etc. there are also more textboxes, they are used for victim name text, id text, line text, leader name text, age text, sex text, incident location text, and etc.

There also more combo boxes in this interface. They are plant combo box, section combo box, incident combo box, shift combo box, and body part combo box. The next there are two radio buttons, they are man radio button and woman radio button. The next section there are four pictures, they are hand picture, head picture, foot picture, and eye picture. The last section, there are five buttons. They are save edit button, delete button, exit button, reset button, and save button.

Figure 3.4 Medical Form Page

First section when user clicks save button so in time management textbox will save the last time the user submits the incident report. Then in this interface there is null validation also in each textbox or combo box. When medical user is using this application, and then after they fill has been complete then the user will click save button. If there is null text among textboxes so the system will show the null text and focus into this textboxes. In this interface also in form no textbox, there is form no automatically and combo boxes are providing here, based on incident ago.

Next section is save edit button. Save edit button is used for saving the database which is edited and it is saved into database server again. Delete button is used for deleting the database which chosen in page before. Exit button is used for finishing the activity in this medical form page. Reset button is used for making null text in all textboxes. Save button is used for saving the all data from textboxes or combo boxes which filled in this form page.

Supervisor Form Page

medical_no	plant	nama_korban	kpk_korban	nama_leader	bagian	line	pathan_urutan	pathan
1	EAST PLANT	adada	213213	adadad	CURLING	22w	HANDLING_MA...	CUT /
2	WEST PLANT	adada	212	adadad	COMPLIANCE A...	adada1	HANDLING_MA...	CONCI
3			0					
4	WEST PLANT	adada	12121	adada	COMMUNICATI...	21w	FLUME / CHEM...	BURN

Figure 3.5 Supervisor Form Page

As shown Figure 3.5 is used for next step after medical form page. This form is used for investigation from supervisor to leader or medical who have investigated victim. There are more labels in this interface. There is time management label, form no label, machine factor label, human factor label, safety factor label, supervisor name label, and supervisor id label. There is also null validation in more

textboxes such as time textbox is used when the supervisor clicks save button and then the last time supervisor uses this application, the data time will be saved into database server, machine factor textbox, human factor textbox, safety factor textbox, supervisor name textbox, and supervisor id textbox.

Next section in this interface also there is data grid view for data medical. Data grid view is used for showing the incident data, and it is used for knowing the victim data for investigating leader or victim of employee. The last section there are three buttons, save button is used for saving the data from supervisor form and will show validation for this form, exit button is used for finishing the activity in this form page, and last reset button is used for making null text in all textboxes or combo boxes.

EHS Form Page

As shown Figure 3.6, in first section there are time management label, form no label, verification label, EHS committee label, and EHS committee id. The next section is textbox in this interface. There are more textboxes also and each textbox there is time management validation such as time management textbox can execute when EHS committee clicks save button so the system will save the last time user uses this application to save into database server, form no textbox will automatically follows medical form before without user write the form no, verification textbox, EHS name textbox, and EHS id textbox. Then null validation will react when there is null field in any textbox or combo box

The other section data grid view for putting data medical in that data grid view. This medical data grid view for showing the incident report which submitted when medical user fills in the medical form page. From the data grid view also user can makes conclusion about incident is compared by investigation.

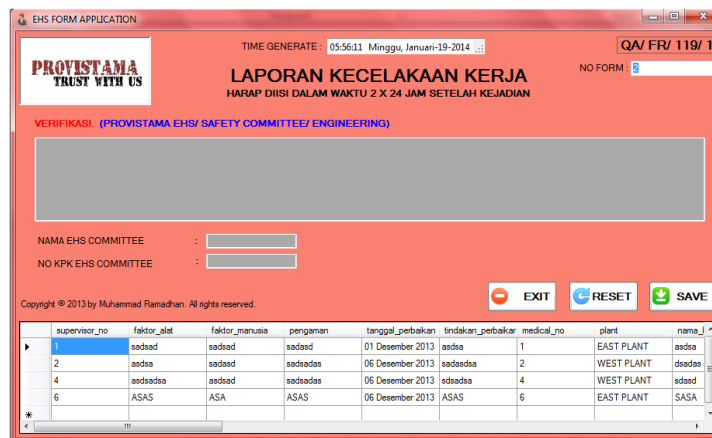


Figure 3.6 EHS Form Page

Medical Database Page

Following Figure 3.7, this is main interface of database which has filled by user.

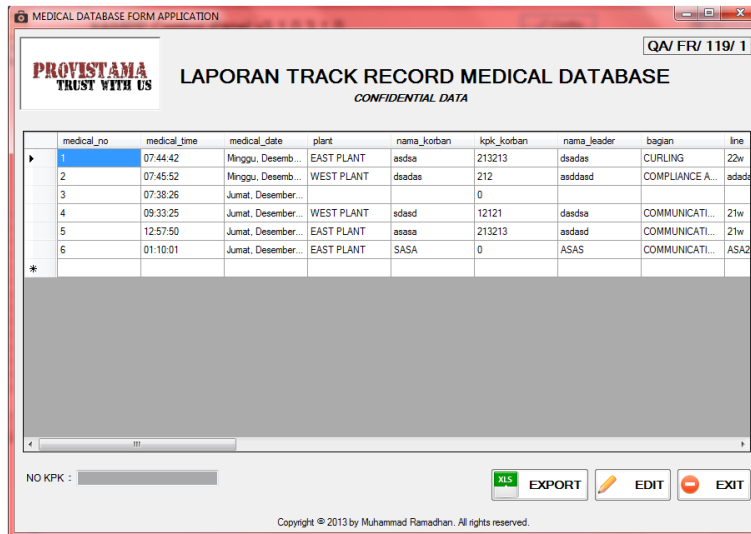


Figure 3.7 Medical Database Page

As shown Figure 3.7 interfaces, there is data grid view for showing incident report has been submitted. The database is successful submitted are shown here in data grid view and we can check all the database based on form no and identify incident. There are also label and textbox for searching data.

It means when more data in data grid view, when user wants to identify incident, the user just puts name employee or id employee in textbox searching. And the last section, there are three buttons for data processing, those are edit button is used for editing the database has been submitted into database server.

When the user clicks edit button, so the system will be direct the user into medical for continue the editing database, export button is used for when the user wants who make graph or make summary each three months or six months so the user have to export the database into Excel format, and exit button is used for finishing the activity in this interface.

EHS Database Page Interface

As shown Figure 3.8, this is main interface of database which have filled by user and received by EHS committee. In this interface consists of a head picture as identity of form, there is a title label of form, there is data grid view for putting all incidents reporting from this application. Start from medical form is incident reporting, then supervisor form is investigation reporting and last EHS form is verification reporting.

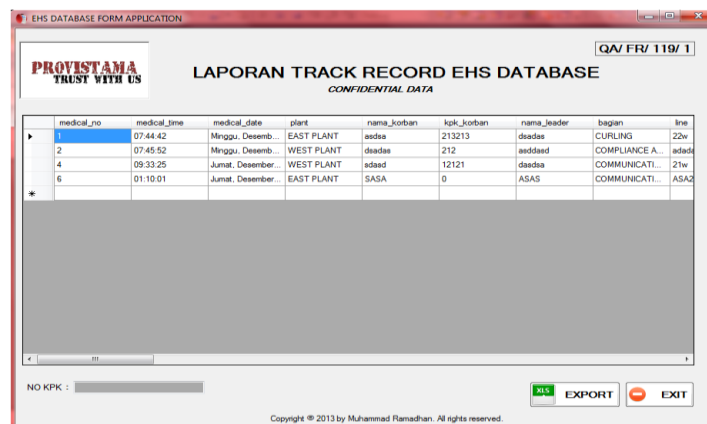


Figure 3.8 EHS Database Page Interface

In this application will be shown to identify incident and commitment all employee to responsible giving the best job. In this application also there is search label and textbox for searching the database. There are two buttons for data processing, those are export button is used when EHS committee wants to make summary from all data as reporting to all employees and exit button is used for finishing the activity in this interface.

4. CONCLUSIONS

Developing incident reporting system application can help compliance assurance people to manage their own incident reporting. This research proves that it is possible to create software needed by compliance assurance people through simple approach. The application itself is built with visual basic code and it is supported by visual studio 2010.

It provides four access rights, there are super admin, medical user, supervisor user, and EHS user. It is made for access rights because, among access rights have relationship to each other. It is started from medical form to fill incident reporting. Next to the supervisor form to fill investigation form. The last form is EHS form, here to fill verification form.

In this application also, there is database each form. It is used to manage data which inserted to database server. Usually an expert system is reporting system, in this application also, there is reporting system, it is used to make victim report for medical reporting. At the end of this application, it will show final result based on user input and combine with the data from database server which is supported by the web server.

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