OHS Information System (Occupational Health and Safety) 
In PT. United Tractors Tbk, Site-Satui 
Mobile Web-Based

Maya Gian Sister1,*, Agustian Noor2, Khairul Anwar Hafizd3
1,2,3 Department of Information Technology, Politeknik Negeri Tanah Laut, Indonesia

ABSTRACT
Medical Check-Up (MCU) is a health check Overall, which is carried out to monitor the health of employees at PT United Tractors Tbk, Site Satui, which is expected from this examination to detect a disease or health problem from an early age. PT United Tractors Tbk, Site Satui is one company that requires a system that can monitor health and the safety of employees at work. Therefore, an occupational health and safety (OHS) system was built, which is expected to assist in monitoring the results of medical check-ups for an employee (MCU), sending health information, monitoring employee health level charts. This occupational health and safety system were built using the method prototype, made using the programming language Hypertext Preprocessor (PHP) and the MySQL database, designed using Data Flow Diagrams (DFD), Entity Relationship Diagrams (ERD), and Flowcharts.

1. INTRODUCTION
Entering the industrial era 4.0 makes the internet a giant network that is used as a link between computers to computers to smartphones in the same network, where technology in this era is developing rapidly in accessing information and being able to record everything within 24 hours a day. So that there are so many various groups who take advantage of current technology to simplify and increase factory productivity which was not thought of to be a very good idea. Like many companies to create a new formula, in the form of an application which is expected to help make work easier and faster. One of them is PT United Tractors Tbk, Site-Satui.

PT United Tractors Tbk, Site-Satui is a company engaged in the service of heavy equipment and the supply of spare parts, which is part of Astra International based in Jakarta. PT United Tractors Tbk, Site-Satui has several subcontractors that are spread out, such as PT Livan Karya, KAMAJU, GSI, TRAC, 99 Motor, and others. PT United Tractors Tbk, Site-Satui is divided into several areas, namely Sungai Danau, Satui, Kusan, Giri Mulya, and Batu Licin, with 3 departments namely Department of Administration, Department of Spare, and Department of Service.

The three departments at PT United Tractors, Tbk Site-Satui, have their respective employees, who are required to have a health check or MCU. This medical check-up (MCU) is intended so that employees can find out about each other's health so that if there is one employee who is not currently experiencing health...
problems or is not fit at work, he can be given a warning about his health. The importance of employee health in working at PT United Tractors, Tbk Site-Satui is very important, to reduce the risk of work accidents.

The importance of occupational health and safety is often conveyed during Safety Talk and Healthy Talk activities every week at PT United Tractors, Tbk Site-Satui, to remind employees about the importance of health and safety at work [1]. But even so, sometimes there are still people who forget to pay attention to health at work [2], which can cause an undesirable event that will harm employees and the company. The health of each employee at PT United Tractors, Tbk Site-Satui is recorded in a file and stored in a box, sometimes some are scattered in the sense that there is a missing record file Medical Check-Up (MCU) [3] so that the employee cannot see the results of his examination, sometimes there are employees who ignore the results of the examination so that when they are asked for their medical records, they will be confused. Health records that are still conventional, in the sense that they are still written on paper and the personal reports of each employee are what makes it difficult for the next examination Medical Check-Up (MCU), with a large number of employees and the absence of specialized personnel to handle it, so it occurs an increase in the number of follow-up Medical Check-Up (MCU) that are not monitored and documented.

The increasing number of follow-up Medical Check-Up (MCU) which continues to increase causes an uncontrolled notification to employees who have special records, and there is no routine notification of health to employees, which causes frequent employee negligence in carrying out further examinations, and the absence of health status which is written also, the next factor is employees who are too busy at work, so that employees cannot control their health without waiting for notification from the boss [1]. The current problem is that no system controls the health of employees, so this is what causes the level of the number of follow-up Medical Check-Ups (MCU) to continue to increase and not be controlled or documented routinely.

The solution to the problem that occurs is to create an information system about the health and safety of employees so that in the future it can assist in health monitoring, reminders, sending notifications, and displaying the health statistics of each employee who works. Based on these problems, the authors raised the title "Information Systems OHS (Occupational Health and Safety) at PT United Tractors, Tbk Site Satui based on Mobile Web" as research in completing the final project.

2. THEORETICAL

2.1. Information Systems Information

Systems are a combination of components or rules in which there is data that is processed whether it is collecting, modifying, or disseminating information to an organization, which can be accessed with a free place and time in an unspecified sense [4].

2.2. OHS (Occupational Safety and Health)

Occupational Health Safety is the smooth running of an activity that greatly affects the level of safety and comfort of a working environment [5] and is also supported by equipment that is fit for use and does not endanger workers.

2.3. Mobile

Web The mobile web is a web page that is accessed on a device mobile with a small physical build and is made with PHP and Javascript scripts, as for the example of the Mobile Web is an application whose user interface can be made consistent for all devices (multiplatform), does not depend on the play store or app store, and can be opened almost in all types of browsers found on all platforms [6].

2.4. Entity Relationship Diagram (ERD)

Entity Relationship Diagram (ERD) is a diagram used for design database on requirements in-development system that includes detailed descriptions of entities, relationships, and boundaries, there are several cardinalities, namely one-to-one, one-to-many, and many-to-many [7].

2.5. Data Flow Diagrams (DFD)

Data Flow Diagrams (DFD) is a data logic model or process created to describe where the data comes from and where the data output from the system is, where the data is stored [8], what process produces the data, and the interaction between the stored data and the processes imposed on the data [9].
2.6. Blackbox

Testing black-box is software testing the activity of the specific terms of the functionality of the system created and performed by creating a test case that has the nature to try all the existing functionality within the system following the necessary specific [7].

3. RESEARCH METHOD

3.1. Stage Data Collection

There are also data collection stages, including the following:

a. The Book Method

The method that uses books and literature other such as reading books, journals, articles, and other sites in writing that can help the application development process is done by collecting data and information that can be justified for the correctness of the data, so the authors use this method [4].

b. The Interview Method

The method is a method of collecting data by conducting questions and answers with employees [10] at PT United Tractors Tbk, Site-Satui, to obtain data and information that supports the making of applications and reports from the OHS Information System (Occupational Health and Safety) at PT United Tractors Tbk, Site-Satui.

3.2. Development

The model development that the author uses is Prototype, whose stages can be seen in the image below.

![Prototype Model](image)

Figure 1. The system development model the *prototype*

Following figure 1 is an explanation of the stages in the Development Process in the Model Prototype [10], in the image above, namely:
1. Collection of needs: At this stage, the author discusses with the field supervisor the needs needed in developing the application to be made.
2. Building Prototyping: At this stage, the writer makes a design of the application display which will be used as a display application that is made.
3. Evaluation: At this stage, the writer submits the design results of the display design to the company to see whether it is appropriate or not.
4. Encoding: At this stage, the author is carried out after the results of the display design have been agreed upon by the company, which then the authors do the coding system.
5. System Testing: At this stage, the author is carried out after the coding of the system has been completed which is then tested by several parties from employees at PT United Tractors Tbk, Site Satui, including for employee users, officers, and admin by holding meetings, as a method. Blackbox and the response time are done by opening the application at the same time.
6. System Evaluation: At this stage the writer evaluates the application after testing the system and analyzes the errors or errors that occur in the application, this stage is very important for the smooth running of the application.

7. System Usage: Software that customers have tested and accepted is ready for use. This stage is carried out after the system is running and system maintenance is carried out.

4. RESULTS AND DISCUSSION

4.1. System Analysis

   a. Current System Analysis

   In the current system, the officer will first manage the results of the employees' MCU which will be stored or archived in a Bantex. Furthermore, for employees who will see the results of their MCU, each them will ask the officer, at the next stage the officer will notify reminder messages and tips about health in a conventional way through group chat or sometimes written on an announcement board located in the room the service office, and then the next stage the employee will receive the results of the MCU records in paper form and if there is a further inspection, the employee will submit the results to the officer for safekeeping [7].

![Figure 2. Analysis of the running system](image)

   b. Analysis of The Proposed System

   In the Analysis of The Proposed System, data on the results of Medical Check-Up will be entered into the system, so that it can help employees who want to see the results of the MCU only through the system without having to report to the officer first, and also if there is Sharing Health or reminder messages officers do not need to notify employees one by one but through the system [7].

![Figure 2. Analysis of the running system](image)
4.2. System Design

a. Entity Relationship Diagram (ERD)

The design of the Entity-Relationship Diagram has 12 entities, namely accounts, access, area, area depart, department, Medical, standards, type Medical, conclusion, position, employee type, sharing, and reminder. Employee entity is a master table related to all entities [11].

b. Context Diagram

Figure 5 is a context diagram with an explanation that Admin can manage, Login data Medical, data, graphic data, employee data, reminder data, conclusion datatype data Medical, standard data Medical, employee type data, and data sharing. Officers can manage data login, data Medical, graphic data, employee data, reminder data, sharing data, and employee type data. Employees can manage login data medical, data, reminder data, sharing data, and graph data [12].
4.3. Implementation

a. Login Page

Implementation of the design Page Login can be seen in the image below. On viewing the page, login there are two textbox input username and password, wherein the interface design page login there is a form input the username and password the from a user and then there is a login button for submission, after which the user did submit the user will directly enter the appropriate page with the level.

b. Dashboard page

Figure 7 is a display of the implementation of the interface design for the home screen of the display page Mobile Phone, where on this homepage, you can view employee health data through tables and graphs.
c. **Sharing Health Page**

Figure 9 is a display of the implementation design interface for the Sharing Health Media display. Display Mobile Phone, where on this page Sharing Health Media, you can view the data Sharing Health that is shared with all system users.

![Employee Data Page](image)

**Figure 7. Employee Data Page**

![Sharing Health Page](image)

**Figure 8. Sharing Health Page**

d. **Automatic Reminder Page**

Figure 10 is a display implementation of the interface design for the Media Reminder Display. Display Mobile Phone, which can see data Reminder that is shared with all system users.
4.4. Testing System

The testing system used by using Blackbox, here are the results of the testing system is done.

Table 1. Blackbox

| No. | Testing Scenario                        | Expected Results                                           | Results |
|-----|-----------------------------------------|------------------------------------------------------------|---------|
| 1.  | Login system                            | can both log in to the system                              | Valid   |
| 2.  | view chart data MCU results             | can see MCU results graph data on the page dashboard       | Valid   |
| 3.  | Viewing data Employees                  | can view Employee data.                                    | Valid   |
| 4.  | Adding employee data                    | can add employee data, which data will enter the database and appear on the Employee data menu in the system | Valid   |
| 5.  | Changing employee data                  | can change Employee data, whose data will be changed in the database and appear on the Employee data menu in the system | Valid   |
| 6.  | Deleting employee data                  | can delete employee data, which data will be deleted in the database | Valid   |
| 7.  | Viewdata Sharing Health                 | can viewdata Sharing Health sent to email employee         | Valid   |
| 8.  | Add Sharing Health                      | data can add data Sharing Health, which data will be entered into the database and appear on the data menu Sharing Health on the system and sent to email employee | Valid   |
| 9.  | Deleting data Sharing Health            | can delete data Sharing Health, which data will be deleted in the database. | Valid   |
10. Viewing reminder data | can see reminder data sent to e-mails employee automatically every week after filling in the results of MCU | Valid

11. Adding reminder data | can add reminder data whose data will be entered into the database and appear on the reminder data menu in the system and sent to email employee automatically every week after filling in the results of MCU | valid

12. Deleting data reminders | can delete reminder data, which data will be deleted in the database. | Valid

13. Viewing medical type data | can see medical type data that is added | Valid

14. Viewing data on employee types | can see data on employee types that are added | Valid

15. Seeing medical conclusion data | can see medical conclusion data added | Valid

16. Adding data medical conclusion | can add medical conclusion data, which data will enter the database and appear on the medical conclusion data menu | Valid

17. Changing data medical conclusion | can change medical conclusion data whose data will be changed in the database and appear in the medical conclusion data menu. | Valid

18. Deleting data medical conclusion | can delete medical conclusion data whose data will be deleted in the database. | Valid

19. Viewing employee data | can see employee data that is added | Valid

20. Adding employee data | can add employee data, whose data will be entered into the database and appear on the employee data menu. | Valid

21. Viewing medical data employee | can see employee medical data added | Valid

22. Adding employee medical data | can add employee medical data, the data will be entered into the database and appear on the employee medical data menu | Valid

23. Printing medical data Employees | can print employee medical data whose data will be printed according to the date entered. | Valid

24. *logout* from system | can *logout* from system | Valid

25. View condition data | can see employee condition | Valid

5. **CONCLUSION**

Based on the results and discussion of the final that has been carried out, it can be concluded, in making this system there are several stages, including data collection, development prototype, to application development which includes making Entity Relationship Diagram (ERD), Data Flow Diagrams (DFD), Flowcharts, Design Interface, implementation Interface, and system testing. Making this system using the PHP programming language with MySQL as the database and Website 2 APK Builder Pro 3.4.0 as a converter into
an application that can be installed on the android smartphone of each employee at PT United Tractors Tbk, Site Satui.

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BIOGRAPHIES OF AUTHORS
Maya Gian Sister. Currently, she has completed her Diploma 3 education in the Information Technology Department at Politeknik Negeri Tanah Laut.
Email: mayagiansister@gmail.com

Agustian Noor, M.Kom, completed a degree S.Kom in the Department of Informatics at Uniska Banjarmasin, South Kalimantan, and completed a master's degree in the Department of Informatics at Dian Nuswantoro University, Semarang, Central Java. is currently a lecturer in Information Technology at Politeknik Negeri Tanah Laut and is a Programmer and Analysis at InterMedia Solusindo.
Email: agustiannon@politala.ac.id

Khairul Anwar Hafizd, obtain a degree S.Kom in the field of Informatics, STTI 2011, then continued his bachelor's degree in the Department of Business Information Systems at LIKMI Bandung and obtained the M.Kom degree in 2014. As long as the authors take a Strata 2 education, the author focuses on examining the field of systems Information relating to the System Business Information. After obtaining a Master's degree, the author works as a lecturer in the engineering department Informatics, Politeknik Negeri Tanah Laut from 2015 until now.