

Web application for design and development of environmental information systems in supply distribution

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Abstract

The Unitary State of the Republic of Indonesia is an archipelagic country most of which is in the form of water. In maintaining the security and integrity of the Unitary State of the Republic of Indonesia, several Navy bases were built which spread from Sabang to Merauke. In terms of meeting the needs of military supplies for soldiers throughout the territory of Indonesia, an Information System for monitoring the distribution of military supplies is needed that is transparent, timely, on target so that any military supplies distributed can be received by each soldier under their respective rights. So far, there is no information system in the process of distributing military supplies, so it is very difficult to monitor the distribution of military supplies, so there are often delays and even wrong deliveries. This study aims to design an information system that can monitor the distribution of military supplies from the top units to the lowest units throughout Indonesia to reduce errors that are still happening in the field in terms of the distribution of military supplies using the Unified Modeling Language (Unified Modeling Language) method. UML such as Use Case Diagrams, Class Diagrams, and Activity Diagrams. The result of this research is to be able to create an Information System that is under functional and non-functional needs that can handle the problems that have existed so far in terms of monitoring the distribution of military supplies so that there are no delays in the distribution of military supplies.

Keywords: Military Supplies; Information Systems; Unified Modeling Language (UML)

1. Introduction

The Unitary State of the Republic of Indonesia is an archipelagic country, most of which is in the form of waters, where Indonesia is located between two continents, namely the continents of Asia and Australia and two oceans, namely the Indian Ocean and the Pacific Ocean. As an archipelagic country, according to the 1982 United Nations Convention on the law of the sea, Indonesia has sovereignty over waters that are enclosed by or located on the inside of a straight archipelagic baseline which is referred to as archipelagic waters. The total area of Indonesia is 7.9 million km² consisting of 1.8 million km² of land area and 3.2 million km² of territorial sea and 2.9 million km² of sea waters of the Exclusive Economic Zone (EEZ), thus the total Indonesian waters area is 77% of the total area of Indonesia. , or three times the land area of Indonesia (Novia, 2017).

For the Indonesian state, which is partly in the form of waters, the Indonesian Navy plays a major role in securing and safeguarding marine areas, where universally the Indonesian Navy has three roles, namely the military role, the police role, and the diplomatic role. In its development to enforce the law and maintain security in the marine area of national jurisdiction, the Indonesian Navy formed three Indonesian Fleet Commands which oversee several Indonesian Navy Main Bases and Navy Bases spread throughout the territory of the Republic of Indonesia.

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In terms of supporting the needs of Indonesian Navy personnel, it is carried out centrally by the Navy Headquarters in this case the Navy Debriefing Service (Disbekal). Disbekal is the central implementing agency of the Indonesian Navy which is located directly under the Chief of Naval Staff who is in charge of providing material supplies and fostering functions as well as carrying out debriefing activities which include the provision of materials, personnel, and units within the Indonesian Navy. In carrying out its main duties and responsibilities, the main functions of Disbekal include determining needs, researching data on the characteristics of supplies, procurement, storage, distribution, and elimination in the field of continuous supply, and carrying out supporting functions which include inventory control, standardization, codification, information systems, treasury administration, and information systems and accounting management of State Property, mobilization and demobilization in the field of provisioning on an ongoing basis.

In its development, the process of fulfilling the needs of individual field equipment for each Indonesian Navy personnel serving in the entire territory of the Unitary State of the Republic of Indonesia is going well, but not a few units works has experienced some very prominent obstacles, especially for the units works outside the island of Java. The obstacles experienced by these units works are in the form of the absence of an information system about what military supplies will be received by each unit works each year and a monitoring system for military supplies that have been or are being sent from the top unit (Disbekal) to the units works below.

This is necessary so that there is clear information for each unit's works so that each unit works prepares more immediately to take the next step in the process of taking or sending the military supplies to the unit's works concerned. The monitoring information system also aims to enable each unit works to monitor the position of the Kappolrap supplies that have been sent from the top unit (Disbekal) to the bottom unit so that there are no errors in the reception process at the intended units works. In this monitoring system, the upper and lower working units works that are intended can monitor the type of transportation equipment used, the day and date of departure or delivery as well as the estimated day and date of arrival at the intended unit works. This is also where the top working unit (Disbekal) can find out whether the military supplies have arrived and been received by the intended bottom working unit. The monitoring information system for the distribution of military supplies is expected to replace the monitoring system for the distribution of military supplies, which has been carried out only using WhatsApp, SMS, and telephone applications so that it is not optimal in the monitoring process for the distribution of military supplies.

Based on some of the problems mentioned above, it encourages researchers to design a WEB-Based Information System and Monitoring System for the Distribution of TNI-AL Military Supplies which will later be able to help solve these problems. This information and monitoring system support variable is designed based on a collection of stakeholders' wishes who serve in the debriefing unit. Identification of user desires is carried out by conducting interviews with personnel serving in the debriefing unit environment and giving questionnaires to experts in the field of distribution of military supplies. In this study, researchers used a web-based monitoring information system. According to Franindo, (2016), the advantages of the web when compared to Mobile Apps include the web being able to run in a browser on a mobile phone. While mobile apps are computer applications that are installed and can run features on smartphones. The web can be accessed by going to the web URL using a mobile browser. Meanwhile, mobile apps can be accessed by installing through the store (AppStore/play store/3rdparty store) and then opening the app.

Based on the problems in the background, it can be formulated that the problem in this research is how to design a web-based monitoring information system for the distribution of military supplies within the Indonesian Navy that is structured and systematic following the wishes of the stakeholders. Where this system is expected to be a means of information and monitoring for each supply unit within the Indonesian Navy in terms of the distribution of military supplies so that all these processes can run well, on target, and can be accounted for. The purpose of this research is to create a web-based monitoring information system for the distribution of TNI-AL military supplies by:

- Identify and accommodate the wishes of all stakeholders involved in the design of an information system monitoring the distribution of military supplies.
- Design and create a monitoring information system program for the distribution of military supplies following the wishes of stakeholders.
- Carry out trials of the use of the monitoring information system for the distribution of military supplies.

2. Material and methods

2.1. System Basic Concept

Understanding the system according to (Amsyah, 2014): "The system is the elements that are interconnected to form a unit or organization". The understanding of the system according to (Susanto, 2004): "The system is a collection of subsystems or parts or components of any kind, both physical and non-physical that are interconnected with each other and work together in harmony to achieve a certain goal".

2.2. Basic Concepts of Information

Understanding information according to (Jogiyanto, 2005): "Information is data that is processed into a form that is more useful and important for those who receive it. While the definition of information according to (Susanto, 2015): "Information is data that has been processed that has a use-value or benefit for the user in the decision-making process or information or output from the transformation process where the data serves as input".

2.3. Basic Concepts of Information Systems

Understanding information systems can be seen in terms of physical and function (Susanto, 2004): "From a physical point of view, it can be interpreted as an arrangement consisting of hardware, software and implementing personnel which jointly support each other to produce a product. Meanwhile, in terms of the function of the information system, it is a sequential process starting from data collection and ending with communication/dissemination. Furthermore, an information system is said to be efficient if it can produce good information, high accuracy, timely, complete, and concise content. The information system activities are Input, Process, Storage, Output, and Control. The information system activities are input, process, storage, output, and control.

2.4. Environmental of Information System Elements

Information systems require the following physical components:

- Hardware (hardware), in the form of data storage equipment or programs, processing tools, and computers.
- Software (software), is a tool procedure for general applications, decision models, and the operation of the system.
- Database contains all the data needed by the software for applications and others.
- Personnel, are workers who operate the system as operators, programmers, and others.
- Procedure, which is a set of rules used to realize data processing and the generation of the desired output.
- Computer networks and data communications, namely connecting systems that allow resources to be shared or accessed by several users.

2.5. The Need for System Environmental Development

According to Hartono, (2005) System development is compiling a new system to replace the old system as a whole or improve the existing system. The old system needs to be repaired or replaced due to several things, namely as follows.

- There are problems (problems) that arise in the old system in the form of:
 - ❖ Irregularities, irregularities in the old system caused the old system to not operate as expected.
 - ❖ Organizational growth, the growth of the organization which causes the formation of a new system. Organizational growth, among others, is the need for information that is getting wider and the volume of data processing is increasing.
- To seize opportunities (Opportunities). Information technology has developed rapidly. Computer hardware, software, and communication technology have developed so rapidly.
- The existence of instructions (Directives). The preparation of a new system can also occur due to instructions from the top leadership or from outside the organization.

2.6. UML Modeling

"Unified Modeling Language (UML) is a standard specification language used to document, specify and build software. UML is a methodology in developing object-oriented systems and is also a tool to support system development" (Windu and Grace, 2013). Unified Modeling Language (UML) is a language based on graphics or images for visualizing, specifying, building, and documenting a software development system based on OO (Object-Oriented). The Unified Modeling Language (UML) diagram (Fatima, 2015) includes the following:

2.6.1. Use case diagrams

Use Case diagram is a description of the function of a system from a user perspective. Use cases work by describing the typical interaction between the user (users) of a system with the system itself through the story of how a system is used. The following is an example of a use case diagram:

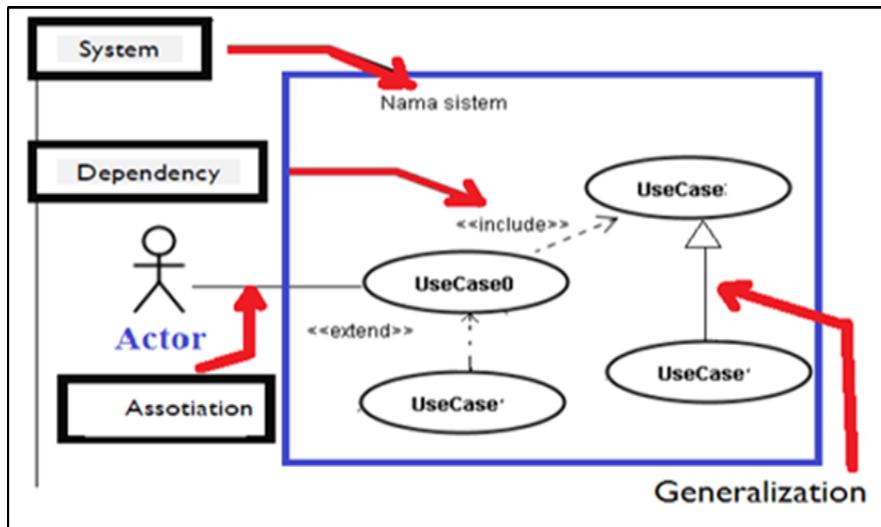


Figure 1 Use Case Diagram Symbol

System

State the system limitations concerning the actors who use it (outside the system) and the features that must be provided (inside the system). Depicted by a rectangle that limits all use cases in the system against which the system will interact. The system is accompanied by a label that states the name of the system but is generally not depicted because it does not add much meaning to the diagram.

Actors

An actor is anything outside the system that will use the system to do something. It can be a human, system, or device that has a role in the successful operation of the system. An easy way to find actors is to ask the following questions: Who will use the system? Will the system provide Values for actors?

Use cases

Identify the key features of the system. Without this feature, the system will not fulfill user/actor requests. Each use case expresses the goal of the system to be achieved. Named according to the goal and depicted by an ellipse with the name in it. The focus remains on the goal not how to implement it even though the use case has implications for the process later. Each use case usually has a trigger that causes the use case to start (e.g., Patient registers and creates a new appointment or requests to cancel or modify an existing appointment).

Association

Identify the interaction between each particular actor with each particular use case. Depicted as a line between the actor and the use case in question. Association can be directed (line with arrows) if communication is one-way, however, generally goes both directions (without arrows) because it is always necessary to do so.

Dependencies. <<include>>.

Identify the relationship between two use cases where one calls the other. If in several use cases there are sections that have the same activity, then the activity section is usually used as a separate use case with the dependency relation of each original use case to this new use case to facilitate maintenance. Depicted by a dotted line with arrowheads with <<include>> notation on the line. The direction of the arrowhead corresponds to the summoning direction. Dependencies <<extend>>. If the call requires certain conditions, the <<extend>> dependency applies.

Generalization

Defines a relationship between two actors or two use cases in which one inherits and adds or overrides the properties of the other. The depiction uses an empty arrow-headed line from the inheritor to the inheritance.

2.6.2. Class Diagram

The class diagram is one type of diagram in UML that is used to display classes and packages that exist in a system that will later be used. Examples of Class Diagrams are as follows:

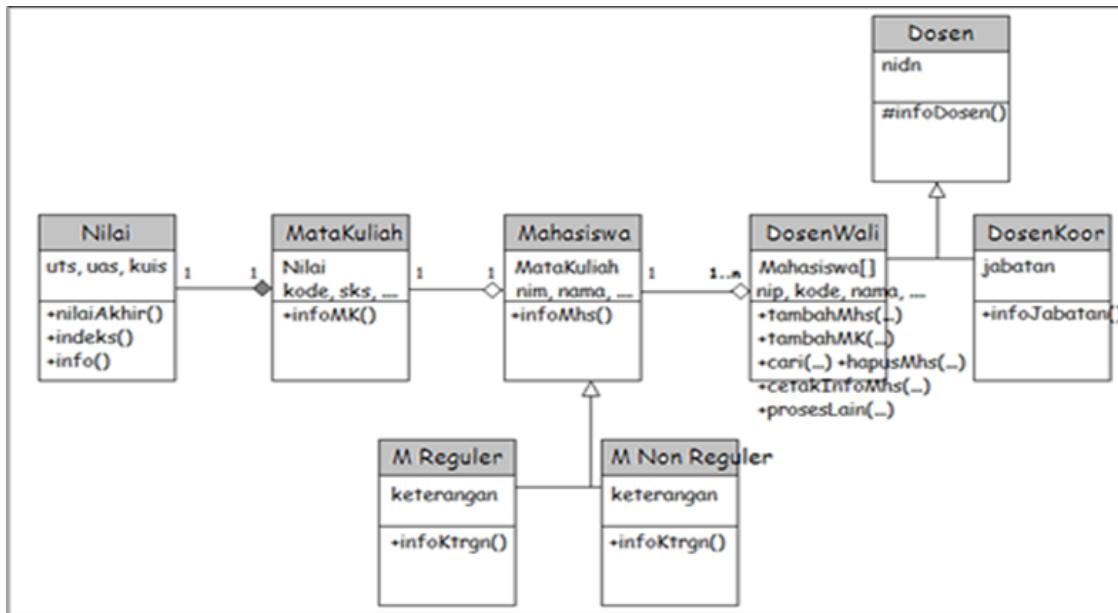


Figure 2 Example of a Class Diagram

2.6.3. Activity Diagrams

An activity diagram is a diagram that describes the dynamic nature of a system naturally in the form of a flow and control model from activity to activity. Activity diagrams describe the various flows of activity in the system being designed, how each flow begins, the decisions that may occur, and how they end.

2.7. Customer Voice Collection Stage (Voice of Customer)

At this stage, a survey is conducted to obtain customer voices which of course will take time and require listening skills. According to Wijaya (2011) Questionnaire is a tool used by researchers to collect primary data. The stages of making the questionnaire are as follows:

- Level of importance. The questionnaire in this section is used to measure how important an attribute is.
- Satisfaction level. The questionnaire in this section is used to measure the level of satisfaction felt by consumers.
- Expectancy level. This questionnaire is used to measure the level of consumer expectations of the attributes.

The general procedure in acquiring customer votes is to determine customer attributes (qualitative data) and measure those attributes (quantitative data). Qualitative data is generally obtained from conversations and observations with customers while quantitative data is obtained from surveys or voting (Polls). Identify customer needs by listening to the customer's voice (better known as Voice of Customer (VoC).

2.8. WEB Basic Concepts

The web is a dissemination of information via the internet. There is no difference between www (world wide web) with the web because most people shorten www to become web. The web is an inseparable part of the internet world. The web is a program that can load movies, Figures, sounds, and music displayed on the internet which is interactive and has the advantage of linking (link) one document to another (hypertext) that can be accessed through a browser.

2.9. XAMPP and PHP

Xampp stands for Apache, PHP, MySql, and phpMyadmin which are tools that provide software packages into one package. Xampp functions as a stand-alone server (localhost), which consists of the Apache HTTP server program, MySql database, and a language translator written in the PHP and Perl programming languages. While PHP (PHP Hypertext Preprocessor) is a server-side programming language that is known to be easy to use. PHP can run on various operating systems such as Windows, UNIX and is compatible with various existing web servers such as IIS, PWS, Apache. In addition, PHP also supports various kinds of databases directly such as MySQL

2.10. MySQL and Yii2 Framework

MySQL is a database server that is most often used in PHP programming. MySQL is used to store data in the database and manipulate the necessary data. The data manipulation is in the form of adding, changing and deleting data in the database. While the YII2 Framework is a software that functions as a component-based PHP framework with high performance for the creation of large-scale web applications.

2.11. Research design

Research design is a method used by researchers to obtain data or products with a specific purpose/research purpose. In this study, researchers used the UML method by using several diagrams such as Use Case Diagrams, Class Diagrams, and Activity Diagrams. The object-oriented UML method helps how to design a monitoring information system software that is following the needs and desires of the user so that it can help and facilitate the monitoring information system for the distribution of military supplies in the debriefing service environment.

The research location refers to the place where the research will be carried out. The location of this research is in Disbekal and Denma Mabesal where the time of the research was carried out from August 2019 to the end of December 2019.

Here the author uses the tools used for this research, namely a PHP-based website and a MySQL database using the yii2 framework as an information system software maker. Monitoring the distribution of military supplies in the Indonesian Navy and administration and materials used are field observations, literature studies, questionnaires to experts, and interviews. to consumers, namely several personnel who served in the Disbekal and Satbek Denma Headquarters for a certain period.

The next stage in this research is data collection. Where the data can be sourced from the Navy Debriefing Service and the Denma Headquarters Satbek. This is done by interviewing, observing, and distributing questionnaires to experts and literature studies. Data was also obtained from the use of software that was tested on the object to be examined with the subject of personnel serving in the Debriefing Service environment.

Data processing is a process carried out after carrying out data collection. The data obtained must be processed using the UML method described previously. The data\ is processed until the software is made and until the final test and is considered complete.

3. Results and discussion

3.1. Data Analysis and Research Results

Based on the Regulation of the Chief of Naval Staff No. Regulation Chief/21/II/2010 dated February 24, 2010, regarding the work instructions of the Debriefing Service. Disbekal is the central implementing agency of the Indonesian Navy which is located directly under the Chief of Naval Staff which is in charge of providing material supplies and fostering functions as well as carrying out debriefing activities which include the provision of materials, personnel, and units within the Navy. To help carry out the debriefing task in the region, Disbekal is assisted by the Technical Implementing Element (UPT) of the Materials and Supplies Service (Dismatbek) which consists of the Materials and Supplies Service of the Koarmada I in Jakarta, the Department of Materials and Supplies of the Koarmada II in Surabaya, the Department of Materials and Supplies for the Koarmada. III in Sorong. The Materials and Supplies Service for each Koarmada has a supply unit under it, including the Lantamal Supply Service (Disbek) and the Lantamal Headquarters Detachment Supplies Unit (Satbek Denma) to support activities and direct distribution and distribution of materials and supplies.

3.2. Early Identification Stage

At this initial identification stage, several activities were carried out to support the process of making an Information System for Monitoring the Distribution of Military Supplies such as user interviews, direct observations within the Debriefing Service, literature studies, and making questionnaires to experts directly related to these activities. Based on the Technical Manual Number: Juknis/01/XI/2014 concerning Procedures for Determining Groups and Classes of Supplies Materials in the Codification of the National Supply Number System (NSN) dated November 14, 2014. Determination of groups and classes of supplies is a technique to determine groups of material supplies in the composition systematically according to the characteristics, functions, and uses of the material supplies.

In the process of determining material groups and classes, we recognize several terms such as Codification, NSN, and Groups and Classes. Codification is a standard system to form a single supply language in identifying, classifying, numbering, and recording manufacturer's sources as well as maintaining up-to-date data on material supplies or completeness of logistics management data. Meanwhile, National Preparation Number (NSN) is a unique 13-digit numeric material code consisting of the class group, country code, and identification number determined by the National Codification Bureau (NCB). The Group and Class are one of the stages of the material codification process of the Nato Codification System (NCS). It is the stage of determining the classification of supplies that has an understanding of the technique of grouping material supplies into a systematic arrangement according to their functions and uses.

3.3. Analysis Stage

In the analysis stage, the analysis is carried out with two needs, Functional Needs and Non-Functional Needs. Analysis of the needs of this information system is carried out through observations on the current system and interviews with system users. Here are the two requirements:

3.3.1. Functional Needs Analysis

The analysis of functional requirements discusses the things that must be met by the information system following the existing system.

3.3.2. Non-Functional Needs Analysis

Analysis of non-functional requirements is the determination of requirements specifications following the wishes or needs of the user to run an information system.

3.4. Initial Design Stage

3.4.1. Use case diagrams

Use a case diagram is one of the requirements in making the model in the system (figure 3). Use cases make it possible to facilitate communication between users and stakeholders regarding the intended system. Use case diagrams to show the interaction between the system and entities outside the system. Entities outside the system are referred to as actors, where actors present tasks related to users or other things outside the system.

3.4.2. Class Diagram

Class diagrams describe the structure of the system in terms of defining the classes that will be created to build the system. Classes have what are called attributes and methods or operations. Attributes are variables that belong to a class and describe properties with a line of text in the box of the class.

3.4.3. Activity Diagrams

Activity Diagram describes the flow of processes carried out by the system to explain to users how the flow of the system begins (initial state), then decisions that will be made by the system and how the system process ends (final state). Activity diagrams also help in explaining the processes both in inputting, deleting, or searching for data by the user (users) in the application being run to make it easier for the user to use (Figure 4).

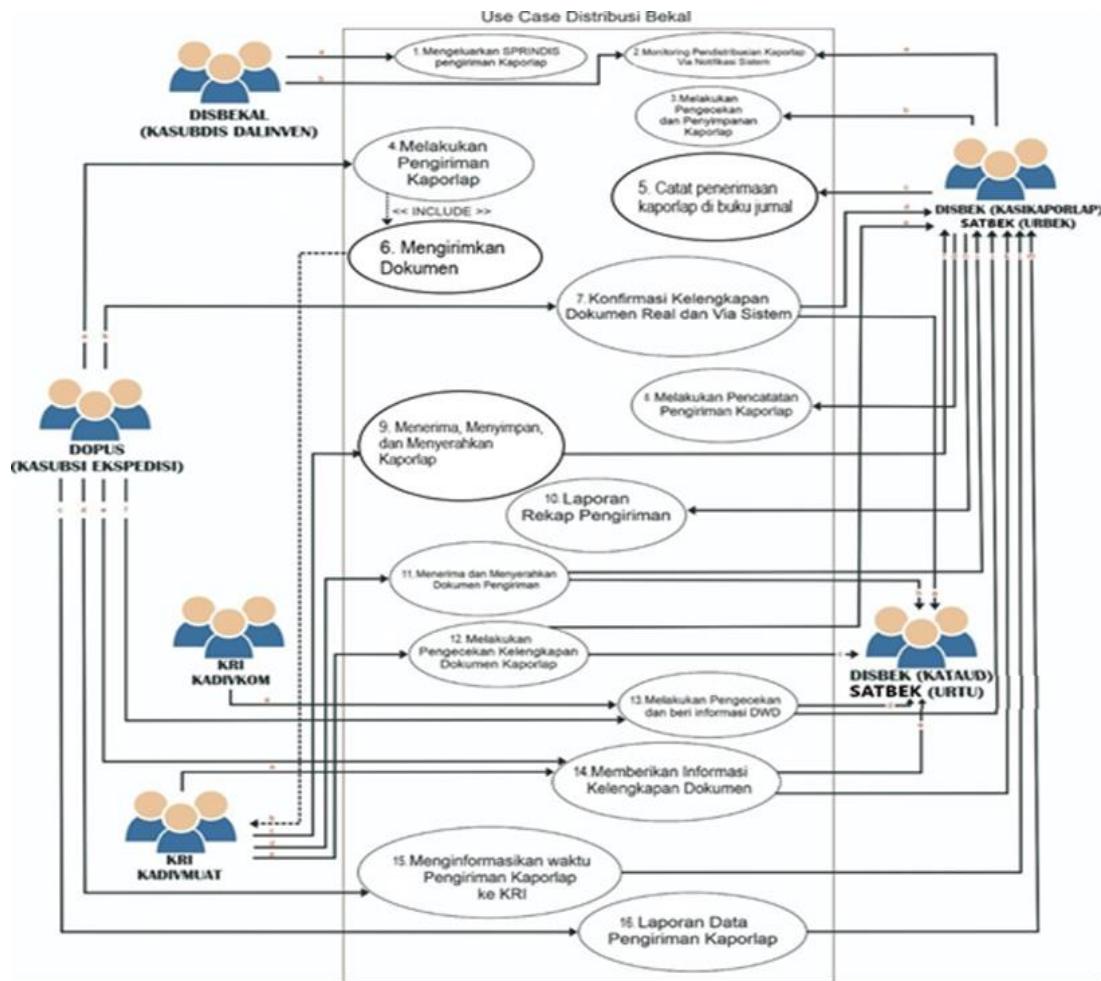


Figure 3 Use Case for the Environmental Distribution of Supplies

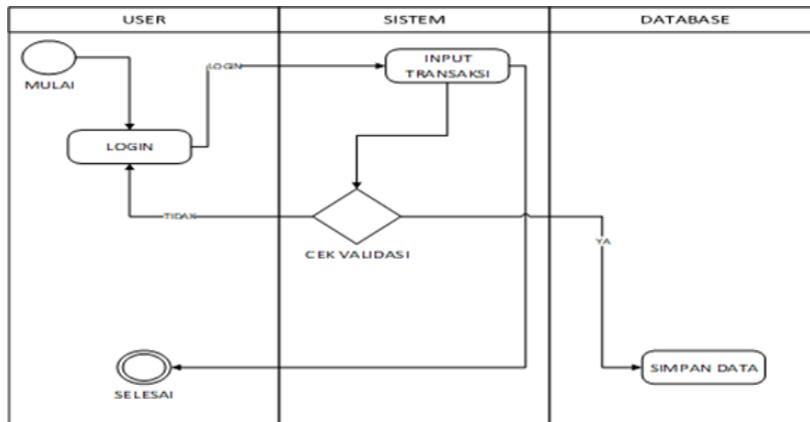


Figure 4 Activity Diagram of Transaction Data

3.5. Implementation and Design Phase

At this stage, the creation of a Database and User Interface on the information system for the distribution of the military supplies was carried out.

3.5.1. Database Creation

In designing the information system file for monitoring the distribution of military supplies, it is necessary to create several databases such as the Permissions, Role, Schedule, Pier, City, Personnel, City, Corps, Rank, Delivery, Ships, Unit Work, Rank, Position, Unit and Military database. The following is an example of a military database structure as follows:

Name: Military Supplies Table

Function: Storing Military Supplies Data

Key: PK (Primary Key)

Type: Varchar (Variable Character)

Description: Here is a table that aims to set the Military master which has the Things ID Primary Key as the unique identification data for the Table.

Table 1 Military Supplies

Name	Key	Type
Military ID	Abc	Varchar
Military Name	Def	Varchar
Military Code	Ghi	Varchar
NSN/ALSN	Jkl	Varchar
codes	Mno	Varchar
Military Type	Pqr	Varchar
Military Unit	Stu	Varchar
Military Status	Vwx	Varchar

3.5.2. Making User Interface

Making User Interface is done to facilitate interaction between users and hardware so that users understand and easily use the software. In this information system, several user interfaces are made such as Login user interface, Name and Rank Code input form, Satker input, Position input, Corps input, Personnel Data form input, NSN/ALSN input, Unit, and Item type input form, Military Form Input, Ships input, Pier input, Supply input, Operation Schedule input, and Military Tracking/Monitoring process input. Here are some examples of user interfaces on information systems such as the following:

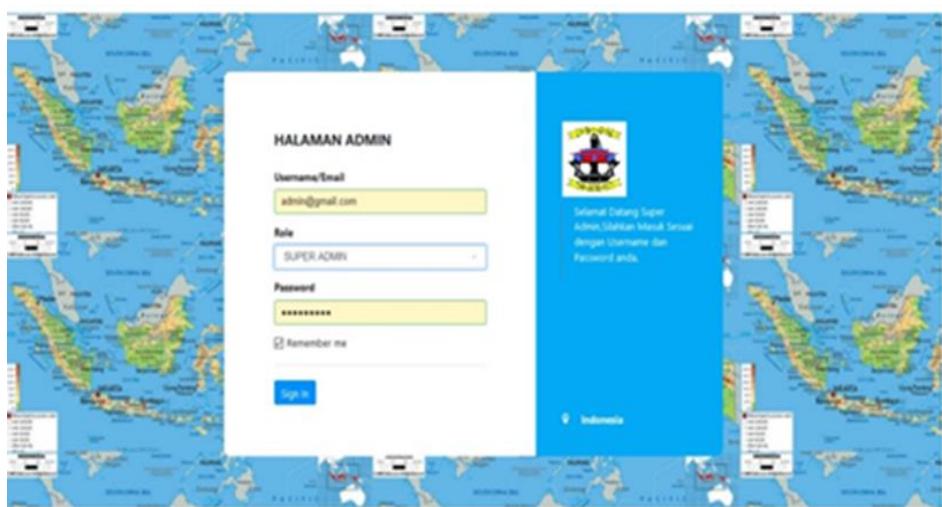


Figure 5 Login Monitoring System for Supplies Distribution

From the Figure above, it can be explained that the Military Dispatch Monitoring display system includes E-mail personnel, Roles that can display the rank or position of each registered personnel, Passwords or passwords that have been entered by personnel when initial registration is made.

The screenshot shows a web-based administrative interface for personnel management. On the left is a sidebar with a dark background and white text, showing navigation links like 'Beranda', 'Data Dermaga', 'Data Operasi', 'Data Personel', 'Data Kaporlap', 'Data Pengiriman Kaporlap', 'Data Belai Uang', and 'Tracking Kaporlap'. The main area has a light blue header bar with the text 'TAMBAH PERSONEL'. Below this are several input fields: 'Nama' (Name), 'NRP' (National ID), 'Pangkat' (Rank) with a dropdown menu 'Pilih Pangkat', 'Jabatan' (Position) with a dropdown menu 'Pilih Jabatan', 'Satuan' (Unit) with a dropdown menu 'Pilih Satuan', 'Korps' (Corps) with a dropdown menu 'Pilih Korps', and 'Status' with a dropdown menu 'Aktif' (Active). At the bottom are two buttons: a blue 'Simpan' (Save) button and a red 'Cancel' button.

Figure 6 Input Form for Supplies Personnel Data

The Figure above can explain that From the Figure above can explain that the display system input data personnel. In the system, it can be filled with Name, NRP, Rank, Position, Unit Work, Corps of Personnel and can also activate or deactivate the status of the item, and make sure the unit form and item type are filled out.

The screenshot shows a tracking and monitoring interface. On the left is a sidebar with the same navigation links as Figure 6. The main area has a summary table with rows for 'No SPRINDS' (Sprinds / 123 / X9 / 2019), 'Nama Operasi' (2), 'KRI' (KRI Karmata), 'Tanggal Pengiriman' (26 November 2019), and 'DWD Non Transit' (5.5555555555556 JAM). Below this is a table titled 'List Kaporlap' with columns: No, Nama Kaporlap, NSN/TALIN, Satuan, Jumlah, Harga, Total Harga, and Keterangan. There is one row in the table. Below the table is another table titled 'Tracking' with columns: TANGGAL PENERIMAAN, KODE PENERIMAAN, KOTAKNA / SATUAN, and JAM TRANSIT. There is one row in the table. The row data is: 12 Desember 2019, PENERIMAAN201912041575430350, Dermaga Lantamal VI Makassar, 36 JAM, TOTAL DWD, 41.33333333333333 JAM.

Figure 7 Tracking/Monitoring Display

From the Figure above, it can be explained that the Military Tracking/Monitoring system in this system can be filled with Letter of Distribution Number, Operation Name, Ships, Delivery Date, non/Transit DWD, Military Data, and DWD after adding the Transit time.

In inputting the personnel master data form, the goods master data form and the Ships master data form, the distribution monitoring transaction form must first input the supporting forms for the master data form, such as some examples of inputting the master data form above. In inputting the master data form, Disbekal also functions as super admin.

3.6. Testing Stage

At this testing stage, you can see whether the information system software for Monitoring the Distribution of Military Supplies that has been made is following the needs of the Debriefing Service environment. This stage is divided into two stages which will be explained in Table as follows:

Table 2 Software Test based on Analysis

No	Functional Needs Analysis	Test result
1	Basic information about Letter of Distribution in the form of the number, date of delivery, destination, and time of delivery is used to determine the contents and purpose of the military being sent.	Users can log in to monitor the distribution of military supplies according to the number, date, purpose, time, and contents of the military.
2	Can recap the activities of expenditures and receipts of military supplies.	The software can record and save the process of outgoing and incoming military personnel.
3	Can provide information for lower units in terms of distribution of military supplies.	The software can provide information in the form of notifications for lower units in monitoring military supplies to be distributed.
4	Can monitor and record the completeness of military supplies documents to be distributed.	The software can print the completeness of the military supplies documents that are distributed accordingly
No	Non-Functional Needs Analysis	Test result
1	This software is designed to have a password and a role to login	This software has passwords and roles registered in the database so that only users who have the right passwords and roles can apply them.
2	This information system has a user interface that is easy and understandable by users.	This information system is made using language that is easy to understand. So that users can understand and use this information system easily.
3	This information system is designed to facilitate monitoring activities and as initial information on the completeness of military supplies documents to the lower working units.	This information system facilitates work in monitoring the distribution of military supplies and as an initial report on the completeness of military data distributed to the lower working units.
4	The data stored in this software can be printed according to the administration used as report material and accountability.	This information system has been designed to facilitate administrative activities on the completeness of the documents distributed for military supplies that can be printed so that they can be recorded as reports and accountable.
5	This information system can record every personnel who is directly responsible for the distribution of military supplies, from delivery to receipt and storage.	This information system can record personnel who carry out these military supplies distribution activities, from sending to receiving and storing in transaction forms.

3.7. Closing Stage

At this stage, conclusions are drawn from the results of testing the Information system monitoring software for the distribution of military supplies (see Table 2).

Table 2 Software Test based on Analysis

No	Before Design	After Design	Result
1	There is no means of information that is fast, precise, and accurate in monitoring the distribution of military supplies.	Availability of fast, precise, and accurate information in monitoring the distribution of military supplies	This designed information system can provide accurate information about the position of military supplies being distributed.
2	There is often a delay in information regarding the receipt of military supplies for the lower units.	There is convenience in delivering information on the receipt of supplies from the top work unit to the bottom work unit.	This information system has a notification in providing information to the lower working units about the military supplies that each work unit will receive.
3	There is often a delay in information regarding the receipt of military supplies for the lower units.	There is convenience in delivering information on the receipt of supplies from the top work unit to the bottom work unit.	This information system has a notification in providing information to the lower working units about the military supplies that each work unit will receive.
4	Difficulty in getting information about the Navy Ships DWD for the personnel of the debriefing service.	It's no longer difficult because it can monitor via software.	This software is made by combining elements of Navy Ships, making it easier to monitor the DWD of Navy Ships.

4. Conclusion

Following the results of the development of the Military Supplies Distribution Monitoring System, the following conclusions can be drawn:

- This information system designed and built has been able to accommodate the wishes of stakeholders in the process of monitoring the distribution of military supplies within the Indonesian Navy so that the problems that have existed so far can be resolved.
- This Information System for Monitoring the Distribution of Military Supplies was designed and built using the Unified Modeling Language (UML) method using several diagrams such as Use Case Diagrams, Class Diagrams, and Activity Diagrams. This information system can help monitor the distribution of military supplies from the top units to the bottom units within the Indonesian Navy. So that later it can simplify some of the tasks of the Navy Debriefing Service.
- This information system for monitoring the distribution of military supplies has been designed and built and tested with good results so that it is hoped that in the future it will be able to assist the task of the Debriefing Service in the Indonesian Navy.

The following are suggestions that can be given based on the results of the research that has been done:

- It is hoped that for the next research on the database software that is made, encryption is carried out so that the database is more secure.
- In the next research, it is recommended to add other means of transportation (airplanes, trucks, etc.) so that it is not only Navy Ships.
- It is recommended in the next research to add several classes of provisions, not only class II, namely military.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

If studies involve use of animal/human subject, authors must give appropriate statement of ethical approval. If not applicable then mention 'The present research work does not contain any studies performed on animals/humans subjects by any of the authors'.

Statement of informed consent

If studies involve information about any individual e.g. case studies, survey, interview etc., author must write statement of informed consent as "Informed consent was obtained from all individual participants included in the study."

References

- [1] Ahaddin F. Activity Diagrams. Quoted July 24, 2019, from Dumetschool. 2015.
- [2] Alter J. Management Information System. Picked July 24, 2019. 2016.
- [3] Andree D. Data Hierarchy. Quoted July 24, 2019, from Word Press. 2013.
- [4] Bandono A, Bastari A, Suharyo OS. Effectiveness Naval Collaboration Flexible Learning (NCFL) Model in Increasing Learning Outcomes The Indonesian Naval Technology College. International Journal of Progressive Sciences and Technologies. 2020; 23(2): 434-442.
- [5] Bandono A. 12. Jurnal The Application Model of Naval Collaboration FlexibleLearning (NCFL) in the Indonesian Naval Technology College: A Case Study. International Journal of Progressive Sciences and Technologies (IJPSAT). 2020; 23(2): 498-505.
- [6] Bastari A, Suharyo OS. Analysis of The Implementation of Occupational Safety Program Efforts to Improve Work Productivity With Fault Tree Analysis Approach. International Journal of Progressive Sciences and Technologies. 2020; 23(2): 728-733.
- [7] Bastari A, Suparmanto D, Sunarta S, Widodo E. Design Of Autopilot Tank Prototype Monitoring System On Ground Station Using Google Maps. Journal Asro-Sttal-International Journal. 2020; 11(03): 31-46.
- [8] Bastari A, Sukandari B, Widjayanto J, Hutabarat D. Dynamic Probability Of The Indonesian Archipelago Underwater Defence With Submarine Sonar. Journal Asro-Sttal-International Journal. 2020; 11(1): 21-31.
- [9] Bodnar, Hopwood. (2016, February Sunday). Management Information System. Picked July 24, 2019. 2016.
- [10] Buana LC. Design and Build Information System Department of Warship Logistics of the Republic of Indonesia. Surabaya. 2012.
- [11] Burch, Grudnitski. Basic Concepts of Information. Picked July 24, 2019. 2012.
- [12] Dimas. Learn computer. Quoted July 24, 2019, from Word Press. 8 December 2010.
- [13] Eko Kuntadi. Basic Concepts of Information. Taken July 24, 2019, from ekokuntadi-bebas.blogspot.com. 2012.
- [14] Fatima Siti. Design of Online Furniture Sales Information System at UD. Melindo Jaya. Range: AMIK Royal Range. 2013.
- [15] Franindo A. Advantages of Mobile Web & Mobile Apps. Picked July 24, 2019. 2016.

- [16] Gagana. Design and Build of Warehousing Information System Applications for Ships Terapang-648 and Dopusbektim Using the SDLC Method. 2018.
- [17] Hanif M. Learn Database system. Picked July 24, 2019. 2012 September.
- [18] Hartono JM. Analysis and Design of Information Systems: A Structured Approach to Business Application Theory and Practice, Third Edition, Andi., Yogyakarta. 2005.
- [19] Jogiyanto. Definition and Understanding of Information According to Experts. Picked July 24, 2019. 2005.
- [20] McFadden. Basic Concepts of Information. Picked July 24, 2019. 2012.
- [21] Nurdin I. Information Systems Analysis. Quoted July 24, 2019. 7 March 2014.
- [22] PcControl. Basic Knowledge of Use Case Diagrams. Picked August Saturday, 2018. 2012.
- [23] Radyawanto. Design and Build an Information System for the Central Selection of Indonesian Navy Soldier Candidates Based on the WEB Application. 2017.
- [24] Sihotang. WEB-Based Logistics Information System Design in the Eastern Fleet of the Republic of Indonesia. 2013.
- [25] Sugiono. Statistics For Research. Bandung: Alphabeta. 2010.
- [26] Suharyo OS, Hidayah Z. Pemanfaatan Citra Satelit Resolusi Tinggi untuk Identifikasi Perubahan Garis Pantai Pesisir Utara Surabaya. Jurnal Kelautan: Indonesian Journal of Marine Science and Technology. 2019; 12(1): 89-96.
- [27] Suharyo OS, Bastari A, Ariyoko HB, Agustian I. The Sustainability Naval Base Model Using System Dynamic Methods. 2019.
- [28] Sumali. Database system design to support inventory management at the Sathar 32 Depohar 30 Point Warehouse of Spare Parts (TB) Malang. Surabaya. 2018.
- [29] Susanto. Basic Concepts of Information Systems. 2004.
- [30] Shah N. Academia. Excerpted July 24, 2019, from WPPRI Fisheries and Marine Regulations Law Course Paper (Fisheries Management Region of the Republic of Indonesia). 2017 April.
- [31] Widanti P. Information System for Financial Statements Sales of Goods at CV Vanda Jaya Abadi Tangerang. Picked July 2019, 2019, from Widuri. 20 April 2015.
- [32] Windu, Grace. Successfully Building Sales Applications with Java. Jakarta : Elex Media Komputindo. 2013.