FLIGHT WATCH OPERATIONAL LOGBOOK WEB-BASED WITH ADDIE METHOD FOR AERONAUTICAL COMMUNICATION OFFICER AT PERUM LPPNPI SENTANI BRANCH

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Abstract

Based on the Aeronautical Mobile Services (AMS) Standard Operating Procedure (SOP) of Perum LPPNPI Sentani Branch in 2020, the Ujung Pandang FIC Jayapura Sector performs flight watch functions for flight operations within its responsibility area. With the advancement of technology in the current era, a new innovation hasemerged, which is a web-based design for the flight watch operational logbook, aiming to facilitate and support the recording of flight watch information. The research method used in the development of this website is research and development, utilizing the ADDIE development method, which includes Analysis, Design, Development, Implementation, and Evaluation. The testing technique employed is black box testing, where the system is tested for its functions without examining the design and source code. The data analysis used is qualitative descriptive analysis, involving observation, interviews, and documentation. The result of this research is a web-based flight watch operational logbook that includes a form for logbook entries, a collection of relevant documents, and a link to the BMKG SIAM website to support the required information.

Keywords: flight watch operational logbook, website, ADDIE

INTRODUCTION

According to the 2020 Standard Operating Procedure (SOP) for Aeronautical Mobile Services (AMS) from Perum LPPNPI Sentani Branch, the Ujung Pandang FIC Jayapura Sector unit carries out flight watch or monitoring functions for flight operations in Class G airspace where the Common Traffic Advisory Frequency (CTAF) procedure is applied [1]. The design of a website-based flight watch operational logbook serves as a medium for documentation and reporting from the responsibility of aeronautical communication officers. The author hopes this will be useful for the work process of personnel in a digital form. The current process of writing in the flight watch operational logbook has some problems, namely using a method that is less optimal and effective. The less optimal and effective issues include aeronautical communication officers writing the flight watch operational logbook in word software and then converting it to PDF, and writing that is not in accordance with procedures because the information obtained by personnel from the related UPBU office is less accurate, especially weather information. The research method used by the author in this study is a type of R&D (research and development) development research. The model used in this development is the ADDIE model. The stages of the ADDIE development model include analysis, design, development, implementation, and evaluation.

Design is a process aimed at developing a system [2,3]. Website is an electronic medium consisting of web pages connected with text, images, videos, or other files [4,5]. In the aeronautical information publication ENR 1.1 General Rules and Procedures, flight watch is the method of providing Actual Time Arrival (ATA) and Actual Time Departure (ATD) information by pilots or airline operators to the designated ATS unit [6]. Based on [7,8], a logbook is an activity of recording various data routinely performed in a specific unit. According to [9,10], HTML is the basic language for web formatting. Based on [11,12], PHP (personal home page) is a programming language combined with HTML. MySQL is software used for processing databases to design applications using a database. Sublime Text 3 is a text editor software used to write code for website programming. XAMPP is software used as a server to execute website functions without an internet connection [13].

Based on the main explanation of the background and theoretical foundation above, the author formulates the problem as how to design a website flight watch

operational logbook using the ADDIE method for aeronautical communication officers at Perum LPPNPI Sentani Branch.

METHODS

The research method used in this study is Research and Development (R&D) method. The development model used in this research is the ADDIE development model. The ADDIE development model is an instructional design process that consists of five phases, namely Analysis, Design, Development, Implementation, and Evaluation.

The author utilizes the black box testing technique, which is a method commonly used to test a program without needing to consider every detail of the program being tested. The advantage of using black box testing is that it does not require in-depth knowledge of specific programming. The black box testing process involves trying out a software that has been developed, and then attempting to input sample data into each form [14].

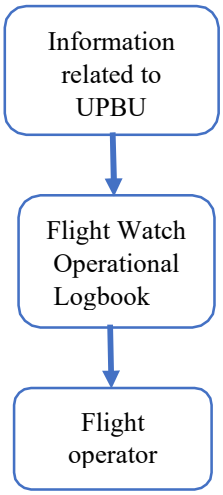
In this study, the author uses the technique of qualitative research data analysis, which is typically conducted after all the data has been gathered. Data analysis in qualitative research is carried out through logical and systematic organization of the data [15]. Qualitative descriptive research is a type of qualitative research. The purpose of descriptive research is to present and explain the reality comprehensively and precisely inline with the stated issues [16].

RESULT AND DISCUSSION

Analysis

During the on-the-job training, the following are the observation results:

1. The process of filling out the flight watch operational logbook adheres to and complies with the Letter of Operational Coordination Agreement (LOCA).



2. There are some problematic situations, including:

   a. The weather information received by ACO personnel is not optimal.

   b. Adjacent units not responding with flight watch information (No Response).

   c. The flight watch operational logbook filling form is not optimal.

The results from interviews conducted with several informants were used to gather relevant data to support this Final Project. The interviews included product design interviews and product testing interviews, which will be further explained in the evaluation stage.

1. Product Design Interview

Interview Date and Day : Thursday, June 22, 2023
Interview Medium : Google Form
Interviewee : I Made Surya Indrawan

Question	Answer
1. In your opinion, is filling out the flight watch operational logbook important for ACO personnel at Perum LPPNPI Sentani Branch?	Important
2. How do you perceive the current process of filling out the flight watch operational logbook?	Fairly Good
3. In your view, has the process of filling out the flight watch operational logbook been optimally executed according to procedures? Considering there have been occasional inaccuracies in the received data.	Not Optimal Yet
4. According to you, why have there been occasional inaccuracies in the data received, especially weather information, during the filling out of the flight watch operational logbook?	Due to personnel at the FW airport location facing difficulties in communication due to minimal cellular network coverage in Papua
5. Do you think there is a need for new innovation regarding the integrated filling out of the flight watch operational logbook through a website, which could support proper and optimal filling out? Why?	Yes, it is necessary as it would facilitate easy database storage for potential future needs

Interview Date and Day : Thursday, June 22, 2023
Interview Medium : Google Form
Interviewee : Lyri Anita

Question	Answer
1. In your opinion, is filling out the flight watch operational logbook important for ACO personnel at Perum LPPNPI Sentani Branch?	Important
2. How do you perceive the current process of filling out the flight watch operational logbook?	Fairly Good
3. In your view, has the process of filling out the flight watch operational logbook been optimally executed according to procedures? Considering there have been occasional inaccuracies in the received data.	Not Optimal Yet
4. According to you, why have there been occasional inaccuracies in the data received, especially weather information, during the filling out of the flight watch operational logbook?	Due to personnel at the FW airport location facing difficulties in communication due to minimal cellular network coverage in Papua.
5. Do you think there is a need for new innovation regarding the integrated filling out of the flight watch operational logbook through a website, which could support proper and optimal filling out? Why?	Yes, it is necessary as it would facilitate easy database storage for potential future needs.

Interview Date and Day : Thursday, June 22, 2023 Interview Medium : Google Form Interviewee : Muhammad Khoiruman Fadilah	
Question	Answer
1. In your opinion, is filling out the flight watch operational logbook important for ACO personnel at Perum LPPNPI Sentani Branch?	Very important.
2. How do you perceive the current process of filling out the flight watch operational logbook?	In my opinion, it is still not optimal.
3. In your view, has the process of filling out the flight watch operational logbook been optimally executed according to procedures?	Considering there have been occasional inaccuracies in the received data. In my opinion, it is still not optimal.
4. According to you, why have there been occasional inaccuracies in the data received, especially weather information, during the filling out of the flight watch operational logbook?	In my opinion, due to human error and lack of familiarity with the information being provided.
5. Do you think there is a need for new innovation regarding the integrated filling out of the flight watch operational logbook through a website, which could support proper and optimal filling out? Why?	It is highly necessary to facilitate users in filling out the flight watch.

2. Product Testing Interview

Interview Day and Date : Wednesday, June 28, 2023 Interview Medium : Google Form Interviewee : I Made Surya Indrawan	
Question	Answer
1. In your opinion, with the technological advancements in today's era, is a website-based logbook useful in its application?	Very useful
2. In your opinion, does the innovation of a website-based flight watch operational logbook make it easier for ACO personnel to carry out their duties while on duty?	Easier
3. In your opinion, is the website-based flight watch operational logbook easy to operate?	Easy to operate
4. In your opinion, do the features of the website-based flight watch operational logbook work well?	Functional features work well
5. In your opinion, what suggestions or opinions can you give for this website-based flight watch operational logbook?	The website functions well according to its needs. It can be enhanced by adding features or improving the appearance, such as adding columns for remarks and location indicators for unattended aerodromes

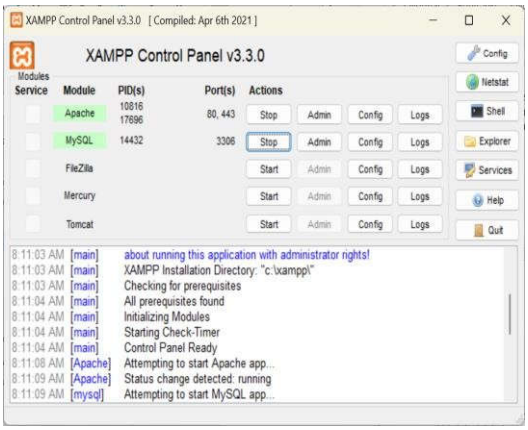
Interview Day and Date : Sunday, June 25, 2023 Interview Medium : Google Form Interviewee : Ady Sumarno	
Question	Answer
1. In your opinion, with the technological advancements in today's era, is a website-based logbook useful in its application?	Strongly agree
2. In your opinion, does the innovation of a website-based flight watch operational logbook make it easier for ACO personnel to carry out their duties while on duty?	It is very useful and advantageous, more durable, paperless, efficient, and easy
3. In your opinion, is the website-based flight watch operational logbook easy to operate?	Very easy to operate
4. In your opinion, do the features of the website-based flight watch operational logbook work well?	They work well
5. In your opinion, what suggestions or opinions can you give for this website-based flight watch operational logbook?	Further development of this website for flight watch operations by adding more information about traffic data, which is the responsibility of flight watch.

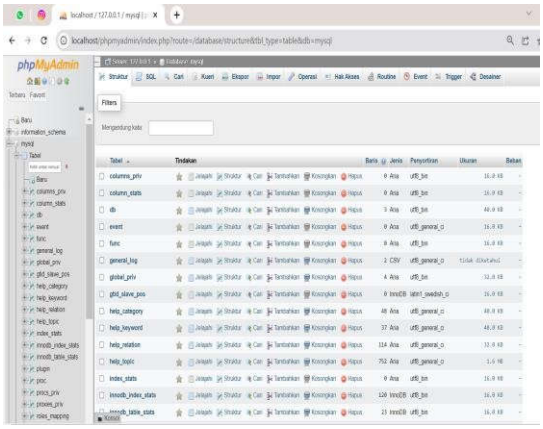
Design

In the design phase, the researcher created the product using several software, including:

3. XAMPP

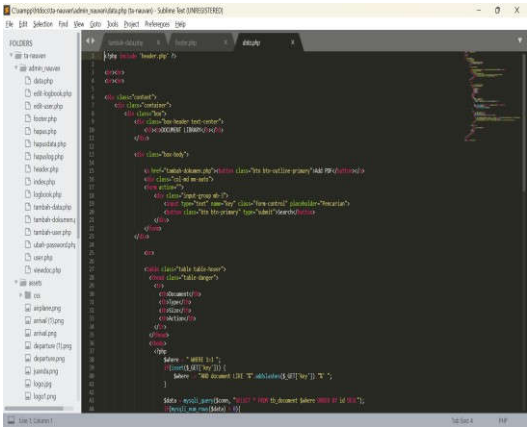
XAMPP, which functions as a web server on the computer, assisting the author in previewing and modifying the website without the need to be online or connected to the internet, along with MySQL as the database.





4. Sublime Text 3

Sublime Text 3 is a software used as the code editor. The digital code design (coding) carried out by the author in the creation of the Final Project is done using this tool.

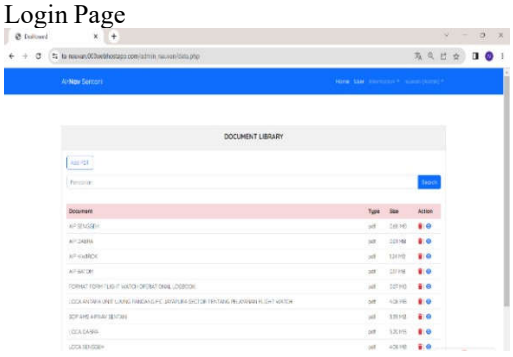


5. The author utilizes 000webhost https://id.000webhost.com/, a free website hosting service accessible through internet browsers, as the web hosting platform for the website-based flight watch operational logbook product.

1.2 Development

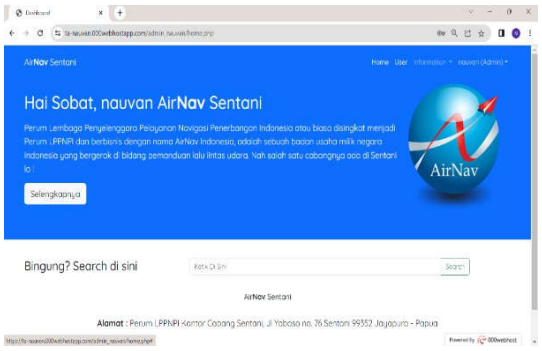
Designing a website-based flight watch operational logbook will result in a website that can be used by ACO personnel at Perum LPPNPI Sentani Branch. The URL of the website that the author has designed is https://ta-nauvan.000webhostapp.com/. Below is the display output of the designed website.

1. Login Page



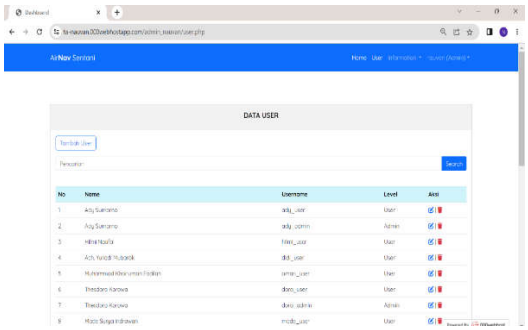
The image above depicts the interface of the website-based flight watch operational logbook, specifically the login page or initial page displaying a form for logging in as an admin or user. Users who successfully log in will be redirected to the home page, while failed login attempts will not result in a page change.

2. Home page



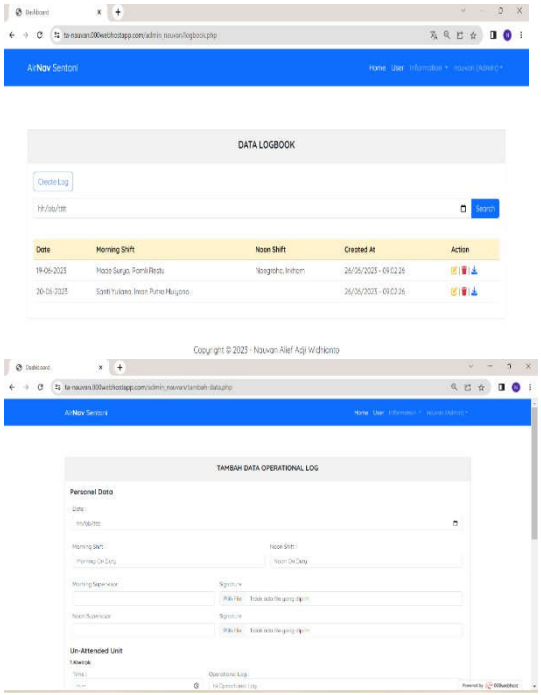
The image above represents the display of the main home page after logging in. At the top right corner, there is a menu bar containing features that users can access. This menu bar may differ based on the user's level, either admin or user.

3. User Data Page



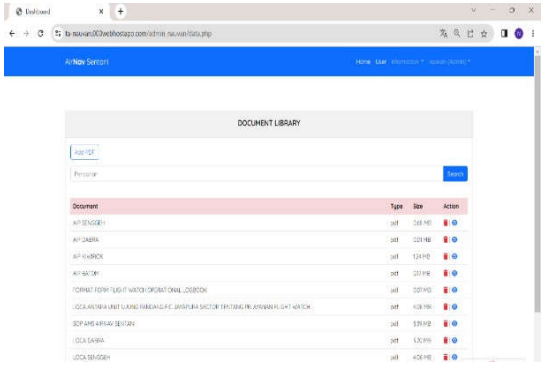
The image above displays the website's user data page, which contains accounts accessible and added by the admin. There is an "Add User" button where the admin can add new website users. On this page, the admin can search for account data, as well as edit and delete other accounts.

4. Flight Watch Operational Logbook Page



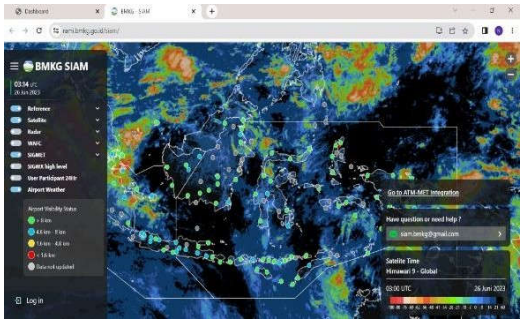
The image above depicts the display of previously created logbook data, where users can edit, delete, and download the results of the flight watch operational logbook that have been generated. Additionally, when the user clicks the "Create Log" button, a form page will appear for filling out the flight watch operational logbook.

5. Procedures Page



The image above shows a display of a collection of related documents that can be searched using the search bar. On this page, users can add and delete documents as needed. There is an "Add PDF" button that users can use to add documents.

6. BMKG SIAM Page



The image above displays the interface of the BMKG SIAM website that can assist users in obtaining weather information data they need. It provides weather information data for airports in Indonesia that have meteorological stations. For more comprehensive weather information data, there is a button labeled "Go to ATM MET Integration."

Implementation

In this research, the author conducted product testing using the black box testing method. Black box testing is a testing approach that focuses on evaluating the functionality of the website-based flight watch operational logbook system without directly examining the program's code. The testing conducted by the author yielded satisfactory results and was successful in each of its test cases. Below is a table displaying the results of the product testing conducted through black box testing:

1. Login Black Box Testing

No	Test Scenario	*Test case*	Expected Result	Remarks
1.	Empty username and password, then click the login button	Username : - Password : -	The login process will fail, and the system will not grant access	SUCCESS
2.	Using incorrect username and password	Username : efghi Password : abcde	The login process will fail, and the system will not grant access	SUCCESS
3.	Using correct username and password	Username : made_admin Password : qwerty	The login process will succeed, and the system will grant access.	SUCCESS

2. Admin Black Box Testing

No	Test Scenario	*Test case*	Expected Result	Remarks
1.	Searching for a user's name	Entering a keyword to be searched in the user menu	The search result matches the entered keyword	SUCCESS
2.	Adding a new user	Clicking the "Add User" button, entering name, username, level, and password	A new user will appear with the entered details.	SUCCESS
3.	Editing a previously added new user	Clicking the blue pencil icon next to the name of the added user	The user's details will change according to the edited data	SUCCESS
4.	Deleting an added user	Clicking the red trash bin icon next to the name of the added user	The user will be deleted and removed from the list	SUCCESS

3. User Black Box Testing

No	Test Scenario	*Test case*	Test Scenario	Remarks
1.	Filling out the flight watch operational logbook	Click the "Create Log" button in the flight watch operational logbook feature under the information menu. Fill out the operational log form completely.	A new flight watch operational logbook data will appear after adding.	SUCCESS
2.	Editing flight watch operational logbook data	Click the yellow pencil icon next to the added logbook data, edit the necessary information.	The flight watch operational logbook data will change according to the edited information	SUCCESS
3.	Downloading flight watch operational logbook data	Click the yellow download icon next to the logbook data	The flight watch operational logbook data will be downloaded to the user's device	SUCCESS
4.	Deleting flight watch operational logbook data	Click the red trash bin icon next to the logbook data.	The flight watch operational logbook data will be deleted	SUCCESS
5.	Adding required documents	Click the "Add PDF" button in the procedure feature under the information menu. Enter the document name and select a document from the user's device	The newly added document will appear in the document library page.	SUCCESS
6.	Opening added documents	Click the blue eye icon next to the document name	The document will open in a new page	SUCCESS
7.	Deleting added documents	Click the red trash bin icon next to the	The document will be deleted	SUCCESS
		document name.	and cannot be accessed again.	
8.	Accessing BMKG SIAM feature	Click the information menu and select the BMKG SIAM feature.	The BMKG SIAM website will appear in a new page	SUCCESS
9.	Changing account password	Click the menu with the user's name and select the "Change Password" feature. Enter a new password.	The new password will be successfully saved and can be used during the login process.	SUCCESS

4. Logout Black Box Testing

No	Test Scenario	*Test case*	Expected Result	Remarks
1.	Exiting the website-based flight watch operational logbook	Click the menu with the user's name and select the "Logout" feature.	The logout process will succeed, and the login page menu will be displayed.	SUCCESS

Evaluation

Based on the product design interviews conducted with ACO personnel and trainees who have undergone OJT at Perum LPPNPI Sentani Branch, the author obtained responses that share similarities, including:

1. The practice of filling the flight watch operational logbook using Microsoft Word software has been carried out adequately but is not yet optimal. Challenges encountered include data accuracy issues influenced by factors like changing weather conditions and network problems.

2. There is a need for innovation or updates that can support logbook filling. With the designed product, the website-based flight watch operational logbook, it is hoped that it will facilitate and support ACO personnel in logbook entries.

Based on the product testing interviews conducted with subject matter experts, media experts and three ACO personnel, the following responses were obtained:

1. The website-based flight watch operational logbook product is user-friendly, and its functional features operate effectively.
2. The website-based flight watch operational logbook product is deemed suitable for use. However, for further development, there are features or appearances that need enhancement.

To design the website-based flight watch operational logbook, the ADDIE method was employed using XAMPP software as a localhost, MySQL as the database, and Sublime Text 3 as the text editor for programming code writing. The results of the product testing using the black box testing method, as conducted by the author, aligned with expectations. The website is operational, and its features succeed in every test.

CONCLUSION

Based on the results of the conducted website design,the following conclusions can be drawn:

1. The website-based flight watch operational logbook was designed using the ADDIE development method, which offers a more systematic approach.
2. The website-based flight watch operational logbook is more integrated and capable of supporting optimal logbook entries.

Based on the results of the designed website, the author offers the following recommendations:

1. The website-based flight watch operational logbook, designed using the ADDIE method, is expected to be implemented at Perum LPPNPI Sentani Branch.
2. With the presence of the website-based flight watch operational logbook as a valid documentation and reporting medium, it is hoped that in the future, it can be integrated with other digital aviation service systems.

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