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DESIGN AND DEVELOPMENT OF AN E-SCHEDULING INFORMATION SYSTEM FOR THE AGENDA OF THE REGIONAL SECRETARY OF THE MALANG REGENCY GOVERNMENT

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Abstract. The management of the Regional Secretary's agenda in Malang Regency currently faces obstacles due to the use of conventional spreadsheets, which are prone to input errors, schedule conflicts, and weak inter-departmental coordination. To overcome these problems, this study developed an E-Scheduling system using the Prototype method to ensure the final product meets user requirements through continuous feedback. Built with the Laravel framework and MySQL, this system centralizes agenda management and automates reporting. The implementation demonstrates clear improvements in the ease of schedule coordination and data accessibility. Furthermore, the User Acceptance Testing (UAT) resulted in a score of 96.25%, which proves that the application has a very high level of user acceptance and successfully meets the users' functional needs for agenda management.

Keywords: Agenda Management, E-Scheduling, Information Systems, Prototyping, Regional Secretariat.

INTRODUCTION

The management of administration and executive agenda scheduling is a crucial aspect in supporting operational effectiveness in government agencies. The Regional Secretariat of Malang Regency has a very high intensity of activities, where the Regional Secretary (Sekretaris Daerah) is responsible for various strategic coordinations, audiences, and official visits. Efficient time management is key to ensuring that all public service and managerial tasks can run optimally without overlapping schedules (Sukamto & Shalahuddin, 2021).

Based on observations and interviews in the administration section of the Regional Secretariat of Malang Regency, the current agenda management process still faces significant obstacles due to its reliance on manual recording using spreadsheets. Although spreadsheets have capable administrative capabilities, the increasing complexity of multi-stakeholder coordination requires a more specialized system. Some obstacles that arise in this manual process include potential schedule mismatches, difficulties in identifying the administrative basis of activities, and limited real-time information accessibility for related parties.

To strengthen the rationale for developing an e-scheduling system, it is vital to review relevant prior studies. Sugiarso et al. (2025) demonstrated that a web-based agenda recording system significantly improves activity management, reduces data errors and duplication, and enhances coordination through automated notifications and integrated schedule archiving. Similarly, Putra & Wahyuni (2023) showed that features such as reminder functions, priority management, and daily summary dashboards effectively minimize schedule delays and increase user satisfaction. Furthermore, Zen et al. (2023) highlighted that applying the Prototyping methodology allows iterative evaluation of core features—such as automated schedule validation and intuitive input interfaces—directly with users, resulting in an optimal and user-friendly scheduling system.

To overcome the operational limitations of the manual process, an E-Scheduling Information System for the Regional Secretary's Agenda was designed. This research applies the Prototype development model using the PHP Laravel framework, which allows the system

development process to be carried out iteratively and participatively. This method was chosen for its ability to accommodate user needs through stages of communication, quick planning, modeling design, prototype construction, to delivery and feedback (Fikriyya & Dirgahayu, 2020).

Through this approach, it is hoped that the resulting system will not only be able to digitize agenda recording but also provide transparent and accurate schedule monitoring features. The implementation of this system aims to minimize human error, accelerate coordination between sub-sections, and ensure executive agenda information can be accessed easily anytime and anywhere, making the bureaucracy performance in the Malang Regency Government more productive and efficient.

RESEARCH METHOD

The research method used in the development of this E-Scheduling information system is the Prototype model. This method was selected due to its iterative nature, which allows for continuous interaction between developers and users to minimize discrepancies in system requirements at the Regional Secretariat of the Malang Regency Government. The stages of this research method are illustrated in Figure 1.

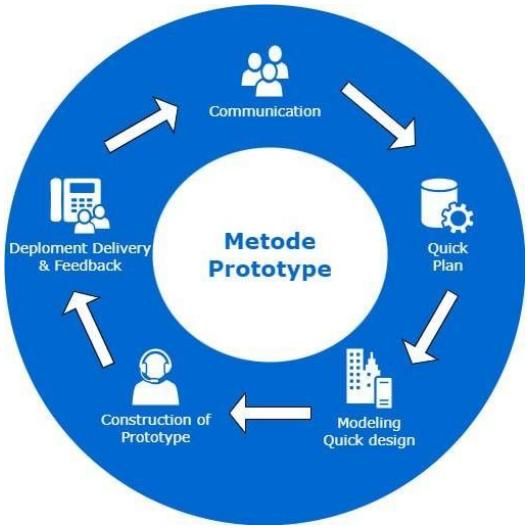


Figure 1 Prototype Stage Diagram
Source adapted from Febiana Putri (2024)

1. Communication
   This initial stage focuses on data collection and requirements analysis. The researchers conducted intensive communication through interviews and direct observations with the staff at the Regional Secretariat of the Malang Regency Government. This process aims to identify constraints within the current manual scheduling system and to determine the core features required, such as executive agenda management, activity category classification, and reporting.
2. Quick Plan
   After the necessary data was collected, a quick plan was formulated to determine the system development flow. At this stage, researchers designed the business logic and data structures to be implemented. This planning phase includes identifying the involved actors (Admin, Regional Secretary, and User) as well as defining the functional and non-functional requirements of the system so that the prototype construction process is more directed.
3. Modeling Quick Design
   This stage involves the visual representation of the system using the Unified Modeling Language (UML). The design was carried out by creating:
   a. Use Case Diagram to depict the interactions between actors and the system.
   b. Activity Diagram to explain the workflow of the agenda input and verification processes.

c. Sequence Diagram to illustrate the order of messages between objects within the system.
d. Class Diagram and database design using MySQL. In addition, User Interface (UI) design was performed to ensure the system has an ergonomic and easily operable layout..

4. Construction of Prototype
At this stage, the design plans were implemented into actual program code. The researchers utilized the PHP programming language alongside the Laravel framework to build the application logic, and Bootstrap for a responsive display. This prototype includes core features such as login modules, master data management, agenda input, and schedule filtering.
5. Deployment Delivery and Feedback
The final stage is the handover of the prototype to the Regional Secretariat for direct testing. Evaluations were conducted using the Blackbox Testing method to ensure button functionality and feature performance, as well as User Acceptance Testing (UAT) to measure the level of user satisfaction. The feedback received from respondents was used as a basis for improvements to ensure the E-Scheduling information system is truly viable and effective in supporting agenda coordination within the Malang Regency Government.

RESULTS AND IMPLEMENTATION

1. Communication

Communication is the initial stage where developers acquire information from users regarding the requirements of the system to be built. This stage focuses on understanding the problems and user needs.

a. Overview of Current Business Processes

Based on initial observations and interviews with the Regional Secretary's Personal Secretary (Sekpri), the current agenda management process is as follows:

- ❖ Schedule requests or activity invitations for the Regional Secretary are received via physical mail, telephone, internal instant messages, external sources, or dispositions from the Regent/Vice Regent.
- ❖ The Personal Secretary records these letters into a Google Spreadsheet.
- ❖ Physical or digital letters are escalated to the Regional Secretary for disposition.
- ❖ Physical or digital letters are returned after receiving disposition from the Regional Secretary.
- ❖ The Personal Secretary schedules the activities that have been approved via disposition by the Regional Secretary.
- ❖ After recapitulating the agenda, the Personal Secretary confirms the Regional Secretary's availability to approve the agenda and coordinates with relevant parties if there are conflicting schedules.
- ❖ Schedule changes or cancellations often require repetitive manual communication with various parties.
- ❖ The recapitulation of the Regional Secretary's activities is done manually from existing records.
- ❖ Following the execution of an agenda, the Personal Secretary creates a report regarding the completed activities in the form of an accountability report.

b. Actors Involved in the System

In this E-Scheduling information system for the Regional Secretary of Malang Regency, there are several actors who play roles in each stage of the business process. Each actor has a specific role that affects the smoothness of the administrative process.

No	Actor Name	Role in the System
1	System Admin	Responsible for managing user data, setting access rights, configuring system settings, and maintaining the security and continuity of the system infrastructure.
2	Regional Secretary's Personal Secretary	Inputs, modifies, and monitors every agenda that is scheduled, ongoing, or completed.
3	Regional Secretary	Approves agendas to be implemented through digitally presented information. The Regional Secretary can easily access and view their own activity schedule.

2. Quick Plan

Quick Plan is the initial planning stage involving the analysis of system requirements, including the analysis of users and the technologies to be utilized. At this stage, an analysis of the E-Scheduling system requirements was conducted.

a. User Requirements for the System

Based on the issues described above, the functional user requirements for the e-scheduling system to be developed are as follows:

No	Functional Requirement	Feature Description
1	Agenda Management	The system's capability to record agendas in detail (activity name, time, location, organizer, contact person, and letter attachments). It is equipped with an agenda status feature (Scheduled, Represented, Postponed, Canceled), a daily format display, a data modification feature, and automatic notifications as schedule reminders.
2	Agenda Request Management	Implementation of Role-Based Access Control. Requesters can view the agenda dashboard; the Personal Secretary acts as the liaison/data verifier; and the Regional Secretary provides final approval on verified agendas.
3	User Management	Access control settings by the Administrator (Admin, Personal Secretary, Regional Secretary) to add and modify user data. It features a login authentication mechanism (username & password) and automatic authorization to maintain system data integrity and security.
4	Reporting	An automatic meeting minutes generation feature based on completed agendas. The system facilitates the documentation of activity results, which can be printed or exported into PDF format for Accountability Report (LPJ) requirements.

3. Modelling Quick Design

This stage encompasses system design based on requirements analysis and the construction of the initial prototype version. UML modeling was conducted to facilitate the system design process, beginning with the creation of Use Case Diagrams, followed by Sub Use Cases, Activity Diagrams, Sequence Diagrams, and Class Diagrams.

a. Use Case Diagram

The system's main use case diagram illustrates functionalities based on the functional table. Within the use case, there are 3 actors involved in the system, resulting in each actor having different access rights.

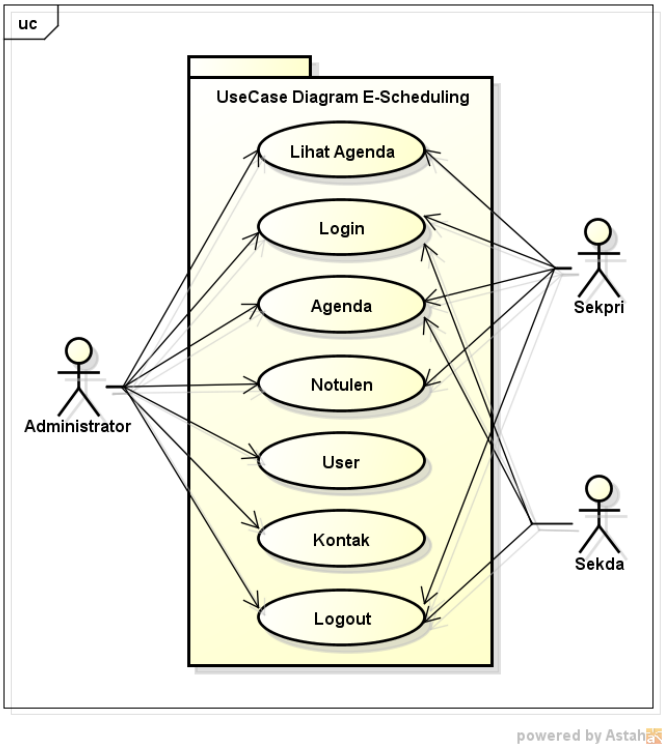


Figure 2 Main Use Case Diagram

b. Sub use case diagram

Sub use case diagram indicates that within the agenda function, users can add data, edit data, view data, and filter agenda data.

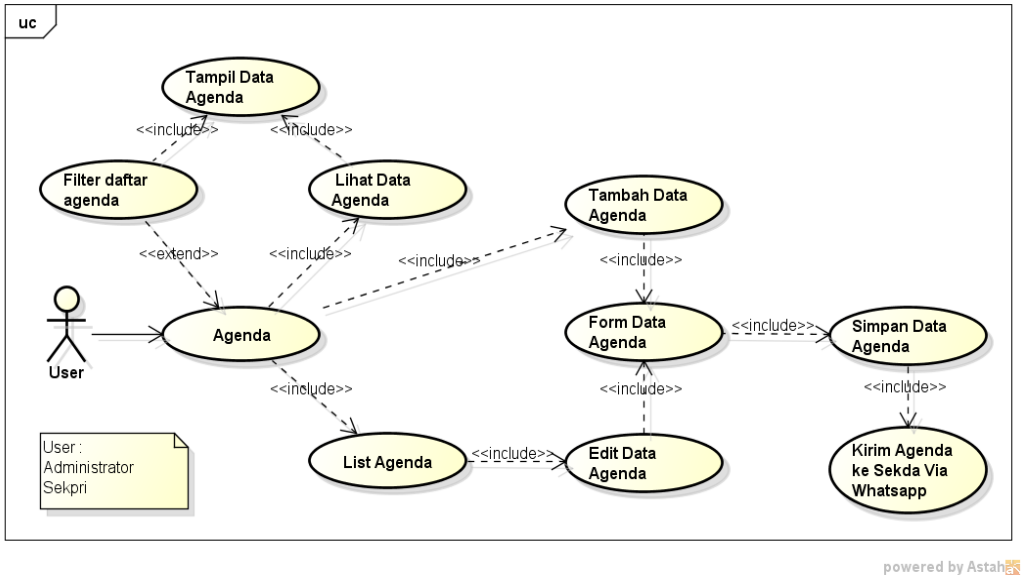


Figure 3 Agenda Sub Use Case Diagram

c. Agenda Activity Diagram

Agenda activity diagram shows the flow of agenda data management, starting from selecting the agenda menu. Subsequently, the system displays data which the user can then view, add to, edit, and filter.

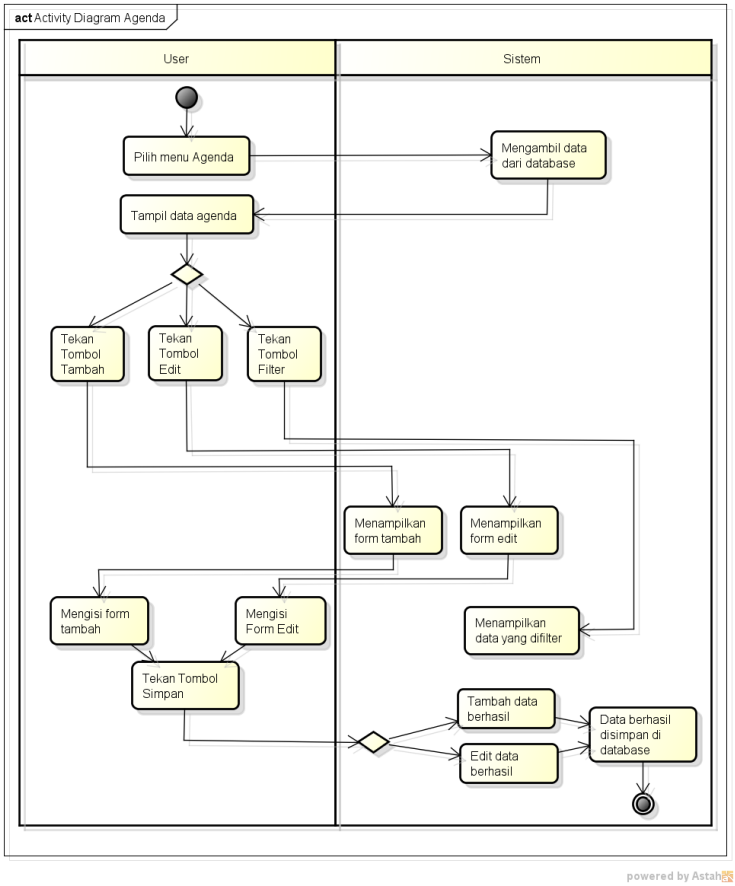


Figure 1 Agenda Activity Diagram

d. Agenda Sequance Diagram

Agenda sequence diagram illustrates the interaction between the Administrator actor and the system (which consists of the view, controller, and model) in managing agenda data. The process begins when the administrator opens the agenda menu; the system then retrieves and displays the agenda data. When the administrator adds data, the input is sent through the view to the controller to be processed and saved into the model, after which the system displays a success notification. A similar process occurs with the edit feature, where selected data is displayed, updated, and saved back to the database. Furthermore, the administrator can filter data based on specific categories; this is processed by the controller and results in the display of filtered data. The entire interaction concludes when the system displays the results according to the user's request.

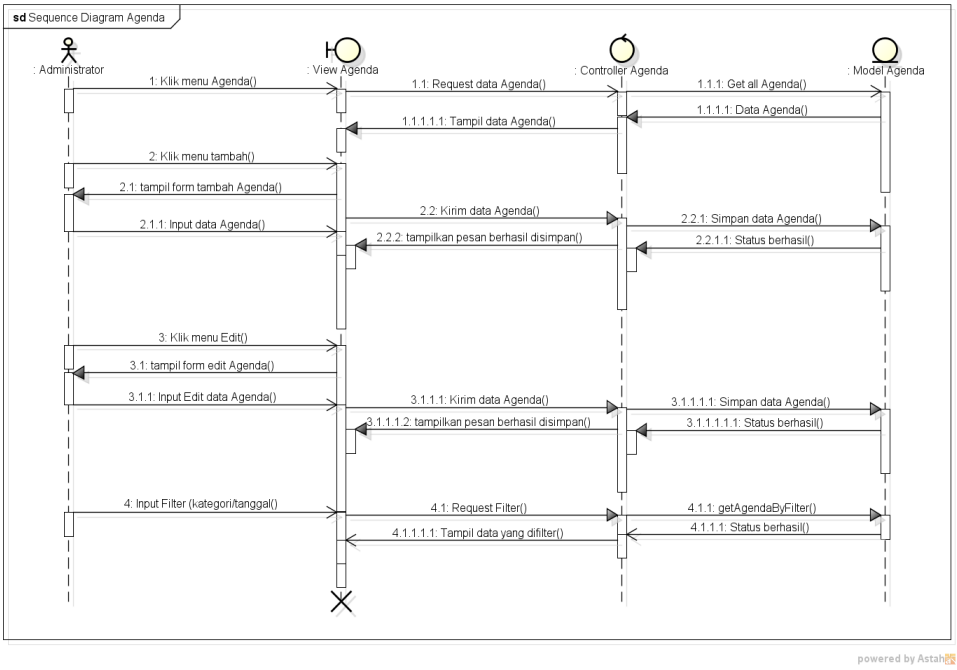


Figure 5 Agenda Sequance Diagram

e. Class diagram
Class diagram can be seen in Figure 6 below.

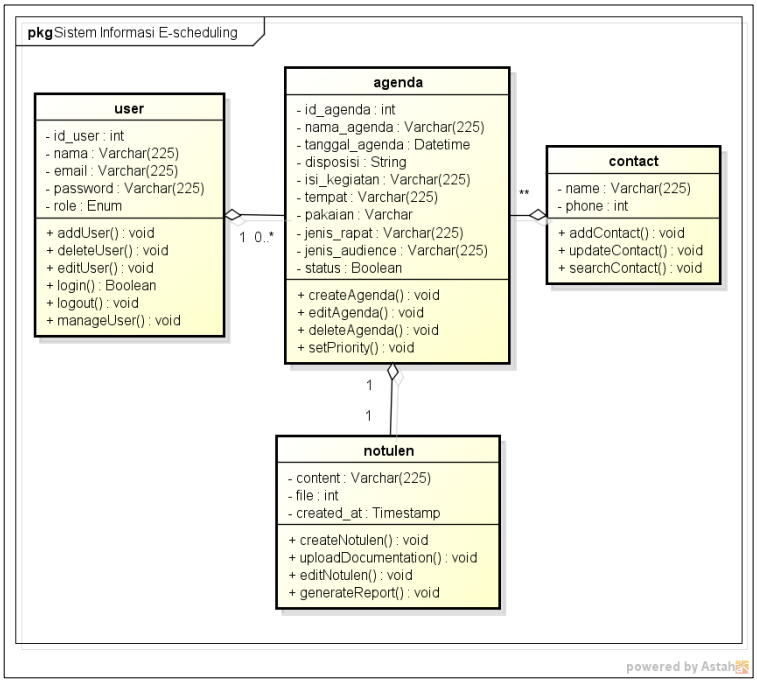


Figure 6 Class Diagram

4. Construction of Prototype

In this stage, the completed system is presented. The programming process was carried out by referring to the prototype design results. This web development utilizes the PHP programming language via the Laravel framework, with MySQL as its database. These stages include database creation, program code writing, and system interface design.

a. User interface
Interface dashboard can be seen in Figure 7.

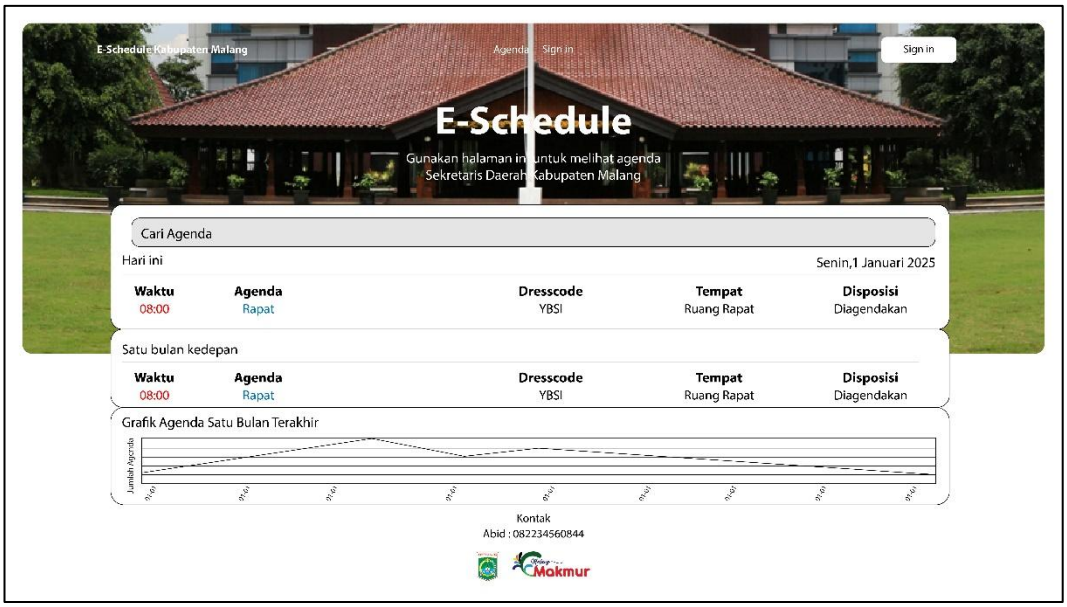


Figure 7 *Dashboard*

Interface dashboard can be seen in Figure 8.

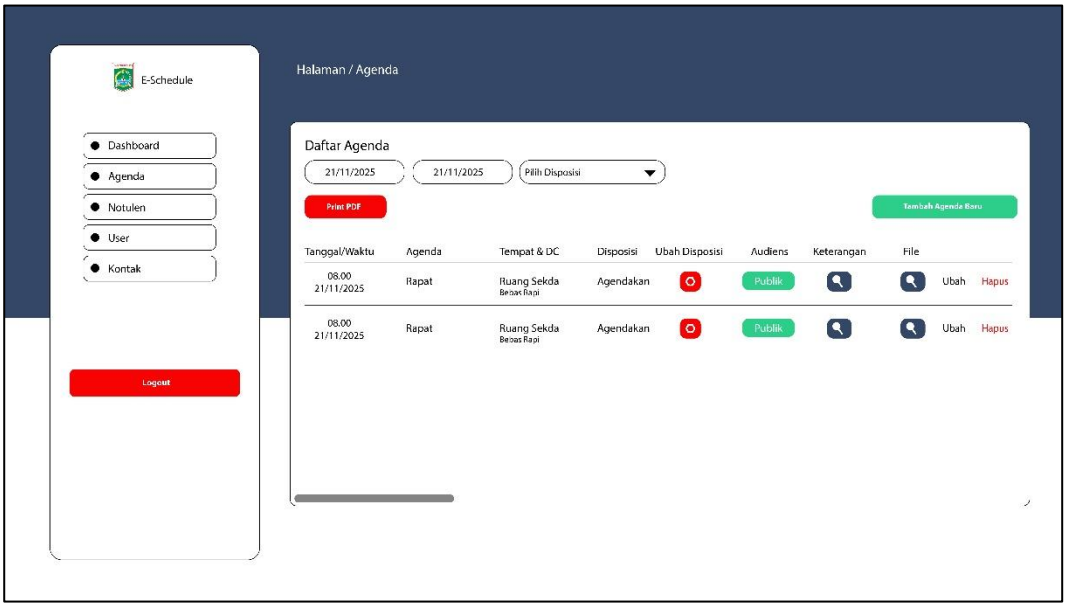


Figure 8 Agenda Interface

5. Deployment Delivery and Feedback

This stage aims to evaluate whether the developed system has met the users' functional requirements. There are two testing phases: Blackbox Testing and User Acceptance Testing (UAT).

a. Blackbox testing

Below are the results of the functional Blackbox testing for the E-Scheduling information system.

Table 1 Agenda Blackbox Testing

No	Function	Test	Expected Result	Testing Result	Status
1	Agenda Page (View Agenda Page)	Click the "Agenda" menu on the sidebar and check if the Agenda page appears	System displays the Agenda page correctly	Agenda page successfully displays	Pass
2	Agenda Page (View Add Agenda Form)	Click the add agenda button and check if the add agenda form appears	System displays the add agenda form	Add agenda form successfully displays	Pass
3	Agenda Page (Add Agenda – Success)	Fill in all fields and click the add button	System saves the data and displays the new data on the agenda list	Data successfully saved and appears on the agenda list	Pass
4	Agenda Page (Add Agenda – Fail)	Leave one of the fields empty and click the add button	System displays an error message and prompts to fill the empty field	System displays an error message according to validation rules	Pass
5	Agenda Page (Edit Agenda)	Click the edit button on one of the data entries and change its contents	System saves changes and updates the agenda data	Data successfully altered according to changes	Pass

b. User Acceptance Test (UAT)

Non-functional testing was conducted using the UAT (User Acceptance Testing) technique. UAT was carried out by distributing questionnaires in the form of a Google Form to respondents acting as users. The questionnaire was compiled based on assessment criteria conforming to the ISO 9126 standard, encompassing aspects of Functionality, Reliability, Usability, and Efficiency.

No	Aspect & Question	Code	Score	Frequency	S	AVG
	Functionality Aspect					
1	Does the system function according to requirements?	A	4	6	24	**92.85%**
		B	3	1	3	
		C	2	0	0	
		D	1	0	0	
		Amount		7	27	
		Calculaion		$\frac{27}{28} \times 100\% = 96.4$		
2	Does the system display the agenda as inputted?	A	4	4	16	
		B	3	3	9	
		C	2	0	0	
		D	1	0	0	
		Amount		7	25	
		Calculation		$\frac{25}{28} \times 100\% = 89.3$		
	Reliability Aspect					
3	Does the system respond well when operated?	A	4	4	16	**82.5%**
		B	3	3	9	
		C	2	0	0	

		D	1	0	0	
		Amount		7	25	
		Calculation		$\frac{25}{28} \times 100\% = 89.3$		
4	Does the data processing in the system run well and optimally?	A	4	2	6	
		B	3	5	15	
		C	2	0	0	
		D	1	0	0	
		Amount		7	21	
		Calculation		$\frac{21}{28} \times 100\% = 75$		
Usability Aspect						
5	Are the menus in the system easy to use?	A	4	5	20	
		B	3	2	6	
		C	2	0	0	
		D	1	0	0	
		Amount		7	26	
		Calculation		$\frac{26}{28} \times 100\% = 92.86$		**92.86%**
6	Does the system have a user-friendly and easy-to-understand interface?	A	4	5	20	
		B	3	2	6	
		C	2	0	0	
		D	1	0	0	
		Amount		7	26	
		Calculation		$\frac{26}{28} \times 100\% = 92.86$		
Efficiency Aspect						
7	Does the existence of this system facilitate agenda management within the Malang Regency Government?	A	4	6	24	**96.4%**
		B	3	1	3	
		C	2	0	0	
		D	1	0	0	
		Amount		7	27	
		Calculation		$\frac{27}{28} \times 100\% = 96.4$		

KESIMPULAN

E-Scheduling Information System for the Regional Secretary's Agenda of the Malang Regency Government has successfully addressed the problem formulation and facilitated the agenda scheduling process as well as digital access to the Regional Secretary's agenda information. The system development process was conducted through five stages of the prototype method, yielding the following results : 1. Communication, Identified core problems in the form of schedule conflict risks due to manual spreadsheet usage and a lack of real-time information accessibility for the leadership. Through interviews with the Personal Secretary and Adjutant, essential feature requirements such as centralized agenda management, notification features, and digital document management were established. 2. Quick Plan, Formulated web-based system specifications using the Laravel framework, designed for three primary actors: System Admin, Personal Secretary, and Regional Secretary. 3. Modelling Quick Design, Produced a comprehensive system design using the Unified Modeling Language (UML), which included Use Case Diagrams, Activity Diagrams, and Sequence Diagrams to detail user interactions with the system before the coding phase began. 4. Construction of Prototype, Created an initial version of the system with functional features such as agenda input, disposition settings, PDF document

attachments, and activity minutes generation. This implementation provided users with a concrete overview of how the digital system operates. 5. Deployment Delivery and Feedback, Based on the test results, this system has proven to meet user functional requirements and showed a significant improvement in usability quality. Black Box Testing results indicated that all system functions operated according to the specified requirements. Furthermore, User Acceptance Testing (UAT) achieved a user acceptance rate of 91.15%, demonstrating that the system fulfills user needs and is highly viable for use in supporting the operational performance of the Regional Secretariat. This confirms that the system is highly feasible and aligns with operational needs to support smooth activity coordination within the Regional Secretariat of Malang Regency. For future research, it is recommended to integrate the E-Scheduling system with the official correspondence application in the Malang Regency Government and expand its scope to accommodate the agenda management needs of the Regent and Vice Regent of Malang.

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