DEVELOPMENT OF A WEB-BASED TOURISM INFORMATION SYSTEM FOR KAMPOENG LAWAS MASPATI USING RAPID APPLICATION DEVELOPMENT METHOD

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Abstract

This study aims to develop a web-based tourism information system for Kampoeng Lawas Maspati to improve digital information management and support sustainable community-based tourism. Field observations and stakeholder interviews identified challenges, including limited digital documentation, unstructured content, and difficulties in information dissemination. To address these issues, the Rapid Application Development (RAD) methodology was employed, consisting of requirements planning, RAD design workshop, and implementation phases. Collaborative engagement with community members ensured the system aligned with user needs and reflected local cultural identity. Functional requirements were translated into system models, including use case and activity diagrams, database design, and interface prototypes. The implementation phase involved coding and black-box testing to validate system functionality. Test results confirmed that all features operated according to specifications. The developed system delivers comprehensive information on village profiles, historical sites, tourism activities, facilities, and tour packages, while providing administrators with content management capabilities. This solution enhances accessibility, promotes independent digital management by local stakeholders, and strengthens the capacity of the community in sustainable tourism promotion.

Keywords: web-based tourism system, RAD method, Kampoeng Lawas Maspati, rural tourism, community-based tourism.

1. INTRODUCTION

Tourism villages play an important role in preserving local culture while contributing to community-based economic development. In Indonesia, rural tourism represents a form of community-based tourism (CBT) that emphasizes local participation and collective management of tourism activities (Priatmoko et al., 2025). The increasing popularity of rural tourism among domestic and international travelers further highlights its potential to support cultural preservation and community welfare (Priatmoko et al., 2025).

Based on field observations and interviews with local stakeholders, several challenges were identified in the management and distribution of digital information within the community. These challenges include limited digital documentation, the absence of structured content management, and insufficient skills in utilizing online platforms effectively. Although internet access is available, the lack of an integrated and user-friendly information system hinders residents from independently managing

and updating tourism-related content. In the context of sustainable tourism development, effective management of tourism resources including information dissemination and communication systems is essential to ensure long-term economic, environmental, and socio-cultural sustainability (Maulana et al., 2025; Ariputry et al., 2023). Without structured digital support, the potential of tourism villages may not be optimally developed or widely promoted. Nevertheless, the findings also indicate a high level of enthusiasm among community members, particularly youth groups (Karang Taruna) and local cultural activists, to actively engage in learning and managing digital platforms as part of efforts to strengthen community-based tourism development.

To address these issues, there is a clear need for a web-based tourism information system that is easy to access, simple to manage, and does not require advanced technical expertise. In the digital era, websites function as an effective medium for information dissemination and promotional activities due to their wide accessibility and ability to present structured content (Sari et al., 2022). Such a system is expected to provide comprehensive and well-organized information through static pages, including the village profile, historical background, cultural activities, and tourism packages. In addition, the visual design of the website must reflect the unique identity of Kampoeng Lawas Maspati in order to authentically represent its local character and cultural values. The effectiveness of a website is closely related to its usability, which refers to the extent to which a system can be used effectively, efficiently, and satisfactorily by users in achieving specific goals (Sari et al., 2022).

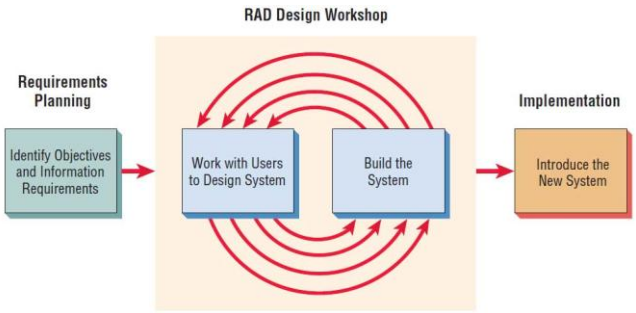
Considering the need for rapid development, flexibility, and continuous user involvement, the Rapid Application Development (RAD) method is considered suitable for this project. RAD is characterized by an iterative design process and rapid prototyping approach, which reduces development time and enhances responsiveness to evolving user requirements (Ramadhana et al., 2023). RAD emphasizes iterative development and active collaboration with users, allowing the system to be adjusted according to community needs within a relatively short development cycle. Therefore, this study focuses on the development of a web-based tourism information system for Kampoeng Lawas Maspati using the Rapid Application Development method, aiming to enhance digital information management and support sustainable community-based tourism promotion.

2. METHODOLOGY

This study applied the Rapid Application Development (RAD) methodology to develop a web-based tourism information system for Kampoeng Lawas Maspati. The RAD approach was selected because it emphasizes iterative development and active stakeholder involvement, enabling efficient and adaptive system development (Widodo et al., 2024). The methodological procedures followed the RAD stages as

illustrated in the RAD design model: Requirements Planning, RAD Design Workshop, and Implementation.

Figure 1. Rapid Application Development



Source: Systems Analysis and Design by K. E. Kendall & J. E. Kendall, 2011.

1. Requirements Planning

The requirements planning phase aimed to identify system objectives and information needs through observations, interviews, and discussions with community stakeholders of Kampoeng Lawas Maspati. This phase focused on understanding existing problems in digital information management and tourism promotion. In the RAD methodology, the requirements planning stage emphasizes identifying general system needs at an early stage, while allowing detailed requirements to be refined through iterative development cycles (Anaking et al., 2023). The outcome of this phase was the identification of the system's functional requirements, which served as the foundation for the subsequent RAD development stage.

2. RAD Design Workshop

The RAD design workshop phase involved collaborative interaction between developers and users to design and refine the system. System modeling and interface design were conducted through the development of use case diagrams, activity diagrams, database design, and UI/UX prototypes using Figma. The RAD design workshop emphasizes joint system design between users and analysts through iterative prototyping and feedback sessions to ensure alignment with user requirements (Awaliah et al., 2023). Users actively participated in evaluating prototypes and providing feedback to ensure that the system met user needs and reflected the local identity of Kampoeng Lawas Maspati. This iterative process enabled continuous improvement of system functionality and usability.

3. Implementation

The implementation phase involved coding and developing the web-based tourism information system for Kampoeng Lawas Maspati. In the RAD approach, this phase includes system construction, testing, and preparation prior to deployment to users (Widiyatmoko et al., 2024). System testing was conducted using the black-box testing method to verify whether the software functions properly according to its

specified requirements. Black-box testing evaluates system functionality based on input and output without examining the internal code structure and focuses on validating functional requirements by testing data boundaries and input conditions (Irawan & Utama, 2022). After ensuring that all system functions operated properly, the system was introduced to community members through basic training and guidance, enabling them to manage and update website content independently. This phase ensured that the system could be sustainably utilized as a digital platform for tourism promotion.

3. FINDINGS AND DISCUSSION

This section presents the findings and discussion of the study, which are structured according to the stages of the Rapid Application Development method. The discussion begins with the requirement planning phase, focusing on the identification of user needs and system requirements for the development of the proposed web-based tourism information system.

3.1 Requirement Planning

This phase aims to identify user needs and the system requirements to be built based on company objectives. Researchers collaborate with stakeholders at this stage to ensure a thorough understanding of the system requirements. Based on field observations and interviews, the provision of tourism information in Kampoeng Lawas Maspati still faces challenges, such as the difficulty for tourists in accessing comprehensive and centralized information about destinations, activities, and available tourism potential. Furthermore, the use of digital media as a means of tourism promotion is still suboptimal, resulting in less than optimal information dissemination and promotional reach to the wider community. The steps in this phase include

3.1.1 Functional Requirement Identification

At this stage, user needs and the functions that the system must perform are formulated in detail so that the resulting system is in line with the main objectives.

Table 1. Functional Requirement

No	Code	Functional Requirement	Description
1	FR-01	Displays Historical Information	The system displays complete information on the history of Kampoeng Lawas Maspati
2	FR-02	Displaying Historical Building Information	The system displays a list of historic buildings along with photos, names, and detailed descriptions.
3	FR-03	Showcasing Activity &	The system displays information on

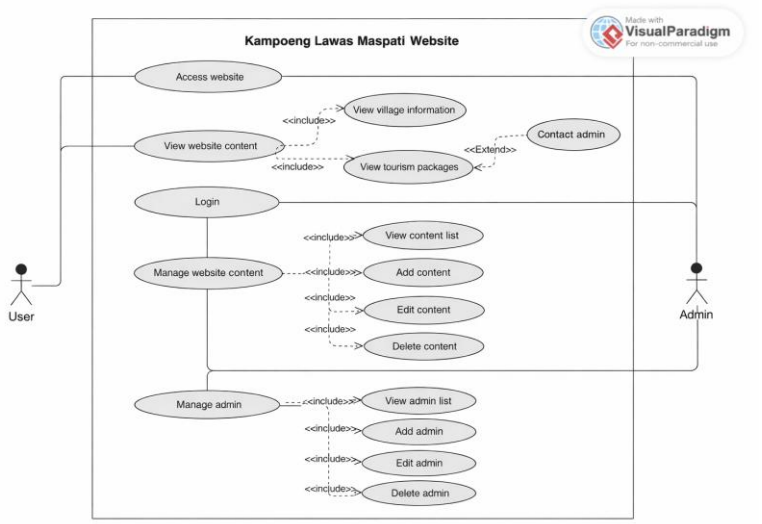
		Educational Tours	tourism and educational activities.
4	**FR-04**	Showing Tourist Facilities	The system displays information on tourist facilities such as prayer rooms, toilets, culinary centers, reading houses, and information boards.
5	**FR-05**	Showing Tour Packages	The system displays tour packages along with prices, minimum number of participants, and facilities provided.
6	**FR-06**	Displays Location Map	The system displays a map of the location of Kampoeng Lawas Maspati using Google Maps integration.
7	**FR-07**	Displays Contact Information	The system displays the complete address, social media, and contact information of the tourism manager.
8	**FR-08**	Contact the Manager via WhatsApp	The system provides a button integrated with WhatsApp to make it easier for visitors to contact the manager.

3.2 Design Workshop

The Workshop Design phase focuses on translating the requirements identified in the requirement planning stage into system design and prototypes. In this phase, system modeling and interface design for the web-based tourism information system of Kampoeng Lawas Maspati are developed using Unified Modeling Language (UML) diagrams and prototype interfaces to represent system structure, functionality, and user interaction flow. The prototype illustrates the main system features and workflow, allowing the design to be reviewed and evaluated before entering the implementation phase. This stage ensures that the system design aligns with user needs and system requirements, while also minimizing potential issues during implementation. One of the system models developed in this phase is the use case diagram, which describes the interaction between users and the system and defines the core functionalities provided by the system.

3.2.1 Use Case Diagram

Figure 2. Use Case Diagram

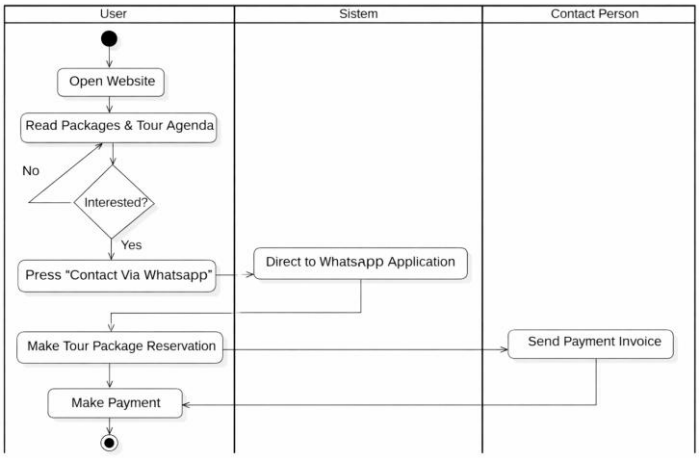


The use case diagram describes the interaction between two actors, User and Admin, in the web-based tourism information system for Kampoeng Lawas Maspati. The User can access the website to view available information, including Kampoeng Lawas Maspati profile information and tourism packages offered. Users can also use the contact feature to communicate with the administrator for further information.

The Admin accesses the system through the login process and is responsible for managing website content. Content management includes viewing the content list, adding new content, editing existing content, and deleting content. In addition, the admin manages administrator data, which includes viewing the admin list, adding new admins, updating admin data, and deleting admin accounts. To further illustrate the workflow of these interactions, activity diagrams are used to describe the system processes in more detail.

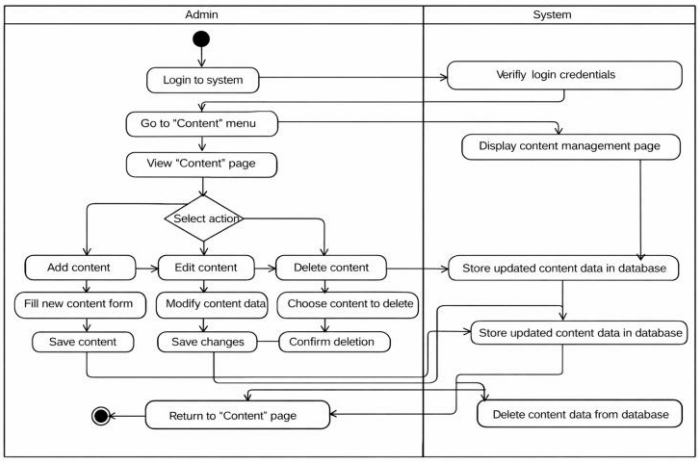
3.2.2 Activity Diagram

Figure 3. Activity Diagram



The activity diagram illustrates the process of ordering a tour package through WhatsApp. The process begins when the user opens the website and reads the available tour packages and agenda information. The system then provides information for the user to review. If the user is interested in a tour package, the user selects the Contact via WhatsApp option, and the system directs the user to the WhatsApp application. The user then communicates with the contact person to make a tour package reservation.

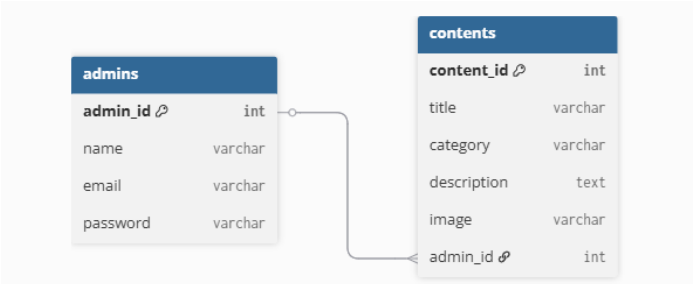
Figure 4. Activity Diagram Admin



The activity diagram describes the content management process performed by the admin in the web-based tourism information system. The process begins when the admin logs into the system, and the system verifies the login credentials. After successful authentication, the system displays the content management page. The admin can then choose an action, such as adding, editing, or deleting content. When adding content, the admin fills in the content form and saves the data, and the system stores the new content in the database. When editing content, the admin modifies the existing content data and saves the changes, and the system updates the content data in the database. When deleting content, the admin selects the content to be removed and confirms the deletion, and the system deletes the content from the database.

3.2.3 Database Design

Figure 5. Database Design



The database design of the web-based tourism information system consists of two main entities: Admin and Content. The Admin entity stores administrator data,

including admin ID, name, email, and password. The Content entity stores website content information, such as content ID, title, category, description, and image.

After completing the system modeling and database design, the next step in the RAD workshop design phase is prototype development. The prototype is created to represent the interface and main features of the web-based tourism information system for Kampoeng Lawas Maspati. It illustrates how users access tourism information through the website and how administrators manage website content through the admin dashboard. The prototype helps visualize the system design and ensures that the planned functionality aligns with system requirements before entering the implementation stage.

3.3 Implementation

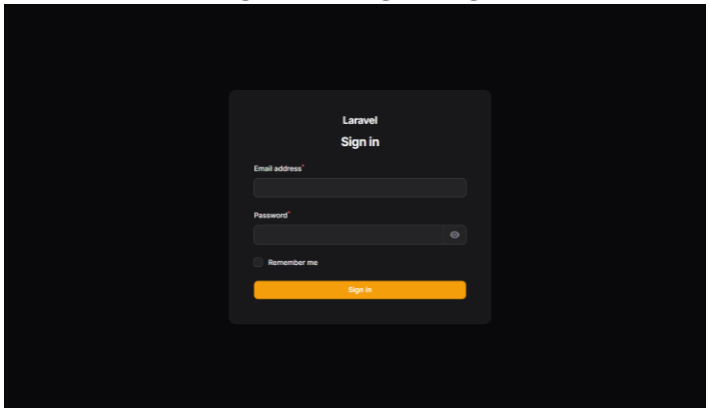
This implementation stage explains how the proposed system is realized based on the system design and functional requirements, including the development of the web-based application and the testing process conducted to verify system functionality and performance.

3.3.1 Website

Figure 6. Landing Page

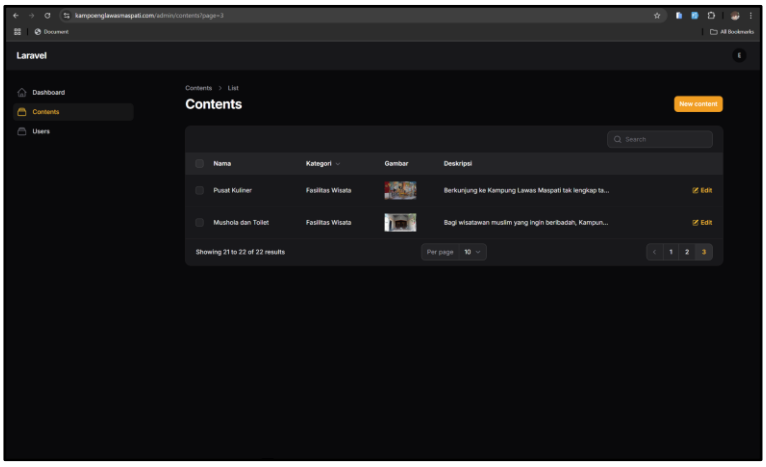
The appearance of the Kampoeng Lawas Maspati website begins with a minimalist white navbar that is sticky and contains the main navigation menu, followed by the Hero Section which displays the village name with modern typography, warm color accents, ethnic patterned background, and aesthetic village atmosphere visuals. Next, visitors are presented with brief information about the village's history through a two-column layout that combines typical murals and text explanations, complete with a photo gallery to strengthen the visual narrative. This website also displays historical buildings in the form of informative cards that are neatly arranged using a grid, with an emphasis on Old Omah 1907 as the main icon. In addition, there is an educational tourism activity section, supporting facilities, and tour packages that are presented in card format to be easy to understand, responsive, and help visitors choose the experience according to their needs. In closing, there is a contact and information section that contains interactive maps, addresses, social media, operating hours, and WhatsApp buttons to facilitate communication and visit planning.

Figure 7. Login Page



The login page is made minimalist and functional, focusing on convenience and access speed. The user must enter an email and password to log in.

Figure 8. Content Management



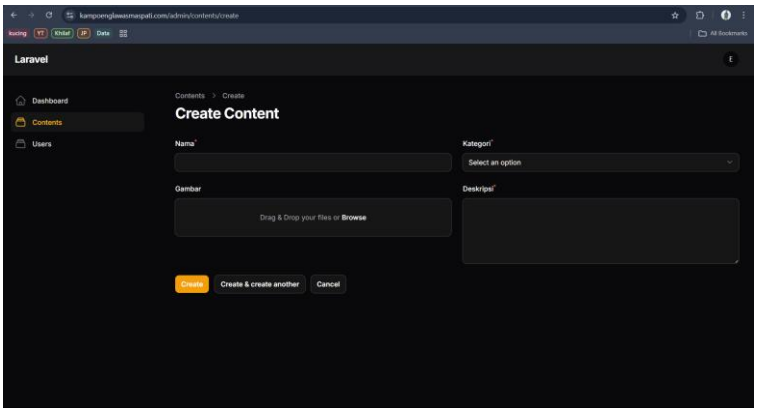
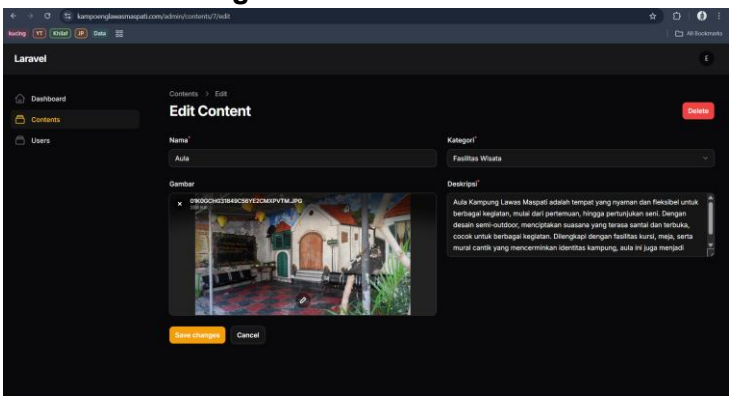
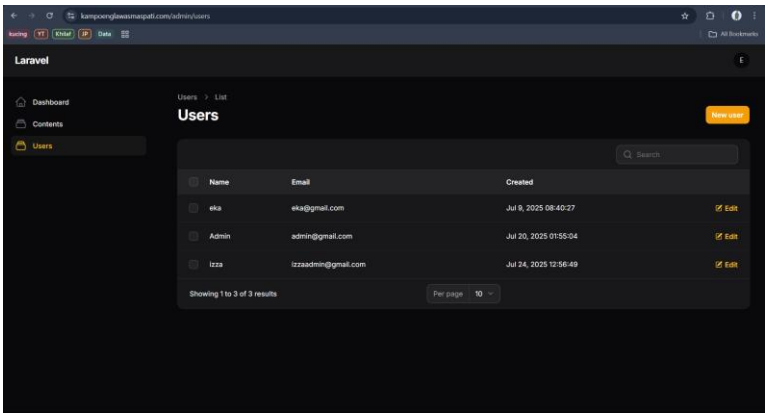


Figure 10. Edit Content



This section is intended for website managers to manage all content and data of Kampoeng Lawas Maspati, from viewing the content list to adding, changing, and deleting information such as tour packages, galleries, articles, and contacts. Admin can add new content by filling in the name, choosing a category, uploading an image, and writing a complete description, as well as updating existing content through the edit page that provides save, cancel, or delete options. To maintain the security of data management, the system also displays a deletion confirmation feature in the form of a warning so that the action of deleting content is done consciously and unintentionally.

Figure 11. User Management



This section is intended to manage the accounts of managers or website admins, not for general users because site visitors do not need to log in. Through this view, the admin can see the list of accounts that have access to the backend system, including name, email, and account creation time. There is also a feature to add new accounts, as well as edit or update existing account information.

3.3.2 Testing

The testing method used on the Kampung Lawas website uses the Black box Testing method. This test aims to know the function of the features on the website that has been created to be running well and correctly. This method focuses on testing system functionality based on functional requirements by evaluating inputs and outputs without examining the internal program code (Syarif, 2021). Black-box testing was applied to verify that each feature of the website, such as information display, content management, navigation, and data processing, functioned properly according to system specifications (Ahrizal, 2020; Uminingsih, 2022).

The testing process involved providing input data to the system and observing the resulting outputs to ensure they matched the expected results. Based on the testing results, all main system features operated correctly without significant errors. Therefore, the developed website can function as intended and is ready to be used as a digital information platform for Kampoeng Lawas Maspati tourism promotion.

4. CONCLUSION

This study successfully developed a web-based tourism information system for Kampoeng Lawas Maspati using the Rapid Application Development (RAD) methodology. Through the stages of requirements planning, RAD design workshop, and implementation, the system was developed collaboratively with community stakeholders to ensure alignment with user needs and local tourism characteristics. The results of black-box testing demonstrate that all system functionalities operate in accordance with the specified requirements. The developed system facilitates structured digital information management and enhances the accessibility of tourism-related content. Consequently, it supports sustainable community-based tourism promotion and strengthens local capacity in managing digital platforms independently.

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