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Development of Web-Based Sindangmekar Information (SinFo) Application as an Effort to Build a Digital Village in Sindangmekar Village

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ABSTRACT
The progression of information technology holds significant sway in augmenting the capacities and welfare of communities, particularly those in rural settings. Embracing this ethos, Sindangmekar Village has embarked on the development of a web-based application termed Sindangmekar Information (Sinfo), epitomizing its commitment to active participation in the digital realm. Sinfo stands as a pivotal instrument in the village's journey towards becoming a Digital Village. Designed as an information repository, it disseminates up-to-date news encompassing village activities, governmental frameworks, geographic particulars, public amenities, and the local economic prospects of Sindangmekar Village. The application's deployment is anticipated to catalyze several transformative outcomes, including bolstering the transparency of village governance, expediting the dissemination of crucial information, and fostering robust social and economic interactions at the grassroots level. The research findings derived from this endeavor not only seek to inspire but also serve as practical guidance for other villages contemplating the adoption of similar information technology solutions. Through shared insights and lessons learned, this research aims to pave the way for rural communities to harness the power of digital innovations, thereby propelling forward rural development initiatives in the dynamic landscape of the digital era.
Keywords: Application, Website, Digital Village, Sindangmekar Village.

INTRODUCTION

This digital era is marked by advances in information technology, especially the internet, which provides great opportunities to encourage economic and social growth at the local level

(Hailiang et al., 2023; Lee et al., 2023; Wijayanti, 2020; Zhang et al., 2022). By harnessing the potential of village profile websites, Sindangmekar Village can efficiently portray its identity, highlight economic potential, demonstrate local wisdom, and introduce development initiatives to communities outside the village. The goal is to open up new opportunities such as local tourism development, investment cooperation, and support for development projects(Razzaq & Yang, 2023)(Wu et al., 2023).

Sindangmekar Village is located in Dukupuntang District, Cirebon Regency, West Java Province, at an altitude of 105 meters above sea level with an area of 1716600, Ha. divided into 8 (Eight) Neighborhood Pillars (RW) and 28 (Twenty Eight) Neighborhood Pillars (RT) the community is mostly farmers who rely on agricultural land of 100 Ha, from the area of Sindangmekar village 171.6600 Ha. 4 (four) km west of the capital city of Cirebon Regency, 4 (four) km east of the capital city of Dukupuntang District with a population of 2471 households, 6648 people consisting of 3434 men and 3214 women and those who have the right to vote 3,957 people consisting of 2299 men and 2901 women have an important role in the development of Cirebon Regency because Sindangmekar village is a buffer village of the capital of the Regency which is a barometer of progress in western Cirebon Regency.

Sindangmekar Village stretches from east to west which stretches Nyi Ageng Serang road, a 2,500 m long provincial road connecting Cirebon Regency with Majalengka Regency and north to south Prince Panjunan road, an 800 m long Regency road connecting Cirebon Regency and Kuningan Regency and divided by the Cisoka River along 3,000 m which flows from Mount Ciremai to the north which is overgrown with a variety of green trees, splashes of water flowing here and there, decorated with yellow rice fields spread adorning the beautiful earth of Sindangmekar as proof that Sindangmekar village is a fertile village.

Sindangmekar Village is very strategic because it is located on provincial and district roads. Strategic from an economic point of view, the strategy is for the development of the development of Cirebon Regency and becomes a travel route for tourists / pilgrims (Riaboff et al., 2022; Sundarakani et al., 2021).

Sindangmekar village has Jami Baiturrohman Mosque which is famous among pilgrims or people who are on the way. Almost every day there are groups of pilgrims / tourists stop at Sindangmekar Village to perform prayers, before continuing their journey. Sindangmekar wants to progress, has a population that is always trying, cultured, religious and prosperous as well as a beautiful environment and harmonious relationships with each other. From the area and the number of potential populations, there are still many potential natural resources and human resources that need professional handling (Ali et al., 2020; Erhan et al., 2021).

The use of information technology, especially through village profile websites, is expected to be a bridge between Sindangmekar Village and the outside world. By presenting village profiles digitally, villages can open up new positive opportunities for local economic and social development (Karsa et al., 2024; Zhang et al., 2022). Identifying economic potential, cultural

wealth, and development initiatives attracts travelers, investors, and those interested in local development (Arroyo et al., 2021; Knollenberg et al., 2022).

The development of this village profile website is a strategic step to empower local communities, giving them an active role in managing and optimizing village potential (Arroyo et al., 2021; Pasanchay & Schott, 2021; Rocca & Zielinski, 2022). Easy access through the internet allows people to engage more deeply in village life, access up-to-date information, and participate in decision-making (Knollenberg et al., 2021; Phelan et al., 2020). This increased participation is important in shaping an inclusive social order, giving citizens greater control over the direction of village development (Ianioglo & Rissanen, 2020).

Thus, through the development of a village profile website, Sindangmekar Village not only connects with the outside world, but also empowers local communities. This step is expected to create a competitive, open, and modern environment, making Sindangmekar Village a positive example in facing the challenges of globalization and digitalization at the local level.

Based on the description above, in this journal the author gave the title "Development of Website-Based Sindangmekar Information (SinFo) Application as an Effort to Build a Digital Village in Sindangmekar Village". This system is developed and utilized for website-based information technology, which is to assist the village in providing comprehensive information.

RESEARCH METHODS

The research methodology used in this study involves two methods, namely data collection and analysis of the running system (Feng et al., 2021; Mirnaghi & Haghighat, 2020). The data collection stage is carried out through observation methods, where researchers observe and study problems related to research objects in the field. In addition, the literature study method is also used to find reference materials that support in defining problems, using books, journals, and information sources from the internet. After data collection, the system analysis stage is carried out. At this stage, researchers analyze the results of the data that has been collected and evaluate various existing problems. The results of the analysis are used to develop a proposed system and application needs to be developed. The system development method used is Scrum, which involves the formation of a Scrum team, the creation of a product backlog, and the sprint phase which includes sprint planning, sprint backlog, daily scrum, sprint review, and sprint retrospective.

RESULTS AND DISCUSSION

Creating a Product Backlog

Product backlog is a list of feature development activities needed based on the analysis of needs in making a village profile website, here is a list of product backlog designing a website-based village profile information system:

Table 1. register product backlog planning

NO	Name	Description
1.	Login Features	Create a Login Form To log in as an admin
2.	Manage Village Device Data feature	Create a Manage Village Device data feature on the admin, where the admin can add, edit and delete Village Device data
3.	Manage Job Data feature	Create a feature to manage Position data on admins, where admins can add, edit and delete Position data
4.	Manage Farm Data feature	Create a Manage Farm data feature on the admin, where admins can add, edit and delete Farm data
5.	Manage Plantation Data Features	Create a feature to manage Plantation data on the admin, where the admin can add, edit and delete Plantation data
6.	Manage Farm Data Features	Create a feature to manage Farm data on the admin, where admins can add, edit and delete Farm data
7.	Manage Fisheries Data Features	Create a feature to manage Fisheries data on the admin, where admins can add, edit and delete Fisheries data
8.	Manage Agenda Features	Create an Manage Activity Agenda feature on the admin, where the admin can add, edit and delete Activity Agenda data
9.	Features of Agriculture, Plantation, Fisheries, Livestock and Furniture Data Report	Create a Report feature on the admin, where the admin can Report data on Agriculture, Plantations, Fisheries, Livestock and Furniture
10.	Manage Furniture Data Features	Create a Furniture data management feature on the admin, where the admin can add, edit and delete Furniture data
11.	Dashboard Admin	Create a primary view or dashboard for admins
12.	Manage Gallery feature	Create a Gallery management feature on admins, where admins can add, edit and delete galleries
13.	Logout Feature	Create out-of-system features for admins
14.	Features View About the village	Create features for users to see about the village
15.	Features See Village Vision and Mission	Create features for users to see the Vision and Mission of the Village
16.	View Village Device Organizational Structure feature	Create features for users to view the Device Organizational Chart
17.	View Village Location feature	Create a feature for users to see the Village Location
18.	Features View Data on Fisheries, Plantations, Agriculture, Livestock and Furniture	Create a feature for users to be able to view Fisheries, Plantations, Agriculture, Livestock and Furniture Data
19.	View Agenda feature	Create a feature for users to see the Activity Agenda
20.	View Gallery feature	Create a feature for users to be able to view the Village Gallery.

In creating a Website-Based Village Profile Information System divided into 4 (four) Sprints. Here's a breakdown of each Sprint:

Sprint 1 (One): In the first sprint this will explain the list of work to be done based on the product backlog list that has been compiled before. The following is the scrum event in sprint 1 (one).

Table 2. Sprint Planning sprint 1

Product Backlog	Task
Login Features	a). Creating a CRUD b). Creating a Database c). UI design implementation for login page d). Test the log in feature
Manage Village Device Data feature	a). UI design implementation for Village Device Data management page b). Test the Manage Village Device Data feature
Manage Job Data feature	a). UI design implementation for Job Data management page b). Test the Manage Position Data feature
Manage Farm Data feature	a). UI design implementation for Village Device Data management page b). Test the Manage Agricultural Data feature
Manage Plantation Data Features	a). UI design implementation for Plantation Data management page b). Test the Manage Plantation Data feature
Manage Farm Data feature	a). UI design implementation for farm data management page b). Test the Manage Farm Data feature
Manage Fisheries Data Features	a). UI design implementation for Fisheries Data management page b). Test the Manage Fisheries Data feature
Logout Feature	

Sprint 2 (Two): In this second sprint will explain the list of work to be done based on the product backlog list that has been compiled previously. The following is the scrum event in sprint 2 (two):

Table 3. Sprint Planning 2

Product backlog	Task
View About Village Features	a). UI design implementation for View About Village page b). Test the View About Village feature
Features See Village Vision and Mission	a). UI design implementation for View Village Vision and Mission page b). Test the features see Village Vision and Mission
View Village Device Organizational Structure feature	a). UI design implementation for View Village Device Organizational Structure page b). Test the features see Village Device Organizational Structure
View Village Location feature	a). UI design implementation for View Village Location page b). Test the View Village Location feature

Sprint 3 (Three): In the first sprint this will explain the list of work to be done based on the product backlog list that has been compiled before. The following is the scrum event in sprint 3 (three):

Table 4. Sprint Planning 3

Product Backlog	Task
Manage Agenda Features	a). UI design implementation for the Manage Agenda page b). Test the Manage Agenda feature
Features of Agriculture, Plantation, Fisheries, Livestock and Furniture Data Report	a). UI design implementation for Agriculture, Plantation, Fisheries, Livestock and Furniture Data Report page b). Test the Report feature
Features View Data on Fisheries, Plantations, Agriculture, Livestock and Furniture	a). UI design implementation for View Fisheries, Plantation, Agriculture, Livestock and Furniture Data page b). Test the feature see Fisheries, Plantations, Agriculture, Livestock and Furniture Data
Manage Furniture Data Features	a). UI design implementation for Furniture Data manage page b). Test the Manage Furniture Data feature

Sprint 4 (four): In the first sprint this will explain the list of work to be done based on the product backlog list that has been compiled previously. The following is the scrum event in sprint 4 (four):

Table 5. Sprint Planning 4

Product Backlog	Task
Admin Dashboard page	a). Implementation of pre-made UI design for admin dashboard b). Test the admin dashboard feature
Manage Gallery feature	a). UI design implementation for Gallery Data manage page b). Test the Manage Gallery Data feature
View Activity Agenda Data feature	a). UI design implementation for the Manage Event Agenda Data page b). Test the Manage Activity Agenda Data feature
View Gallery feature	a). UI design implementation for View Gallery page b). Test the View Gallery feature

Daily Scrum

The next stage of daily scrum is a scrum activity held almost every day by the development team. In this daily meeting, discuss what has been resolved in the sprint backlog by updating the burndown chart. Here are the burndown chart results of sprint 1 to sprint 4.

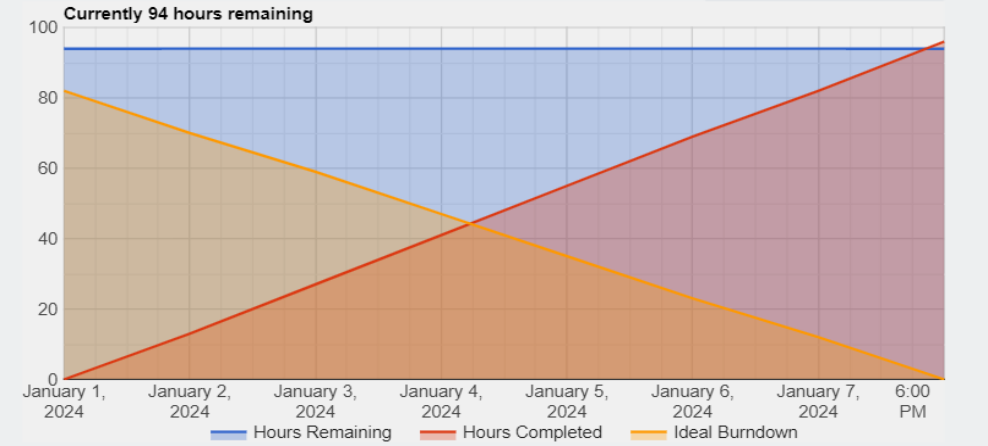

Figure 1. burndown chart sprint 1

Figure 1. On January 8, 2024, the first day of the sprint, the team started with approximately 118 hours of work remaining. On January 14, 2024, the graph shows that there are no estimated works left, meaning the team has successfully completed all sprint backlogs. This is indicated by the meeting point between the lines "Hours Remaining" and "Hours Completed".

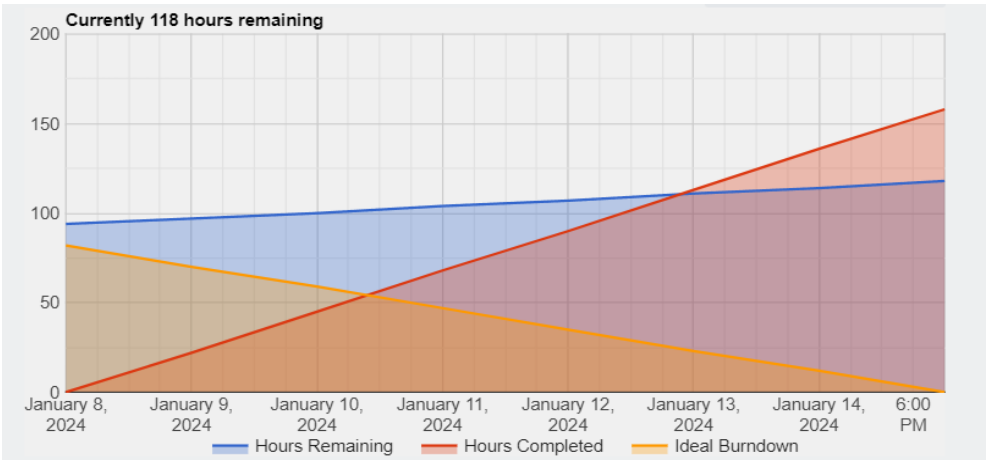

Figure 2. burndown chart sprint 2

On January 8, 2024, the first day of the sprint, the team started with approximately 118 hours of work remaining. At the beginning of a sprint, the remaining actual line of work is almost always below the remaining ideal job line. However, on January 12, several tasks occurred that kept the remaining actual employment lines above the remaining ideal employment lines. This causes some tasks not to be completed until the end of the sprint. This may be caused by a task that takes a long time to complete, thus making the next task work delayed and cannot be completed.

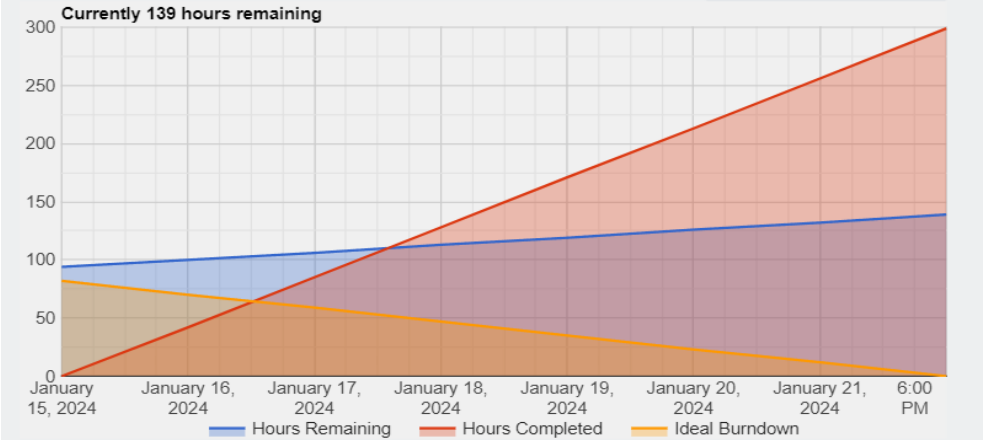

Figure 3. burndown chart sprint 3

On the first day of the sprint, January 15, 2024, the team estimates that there are around 250 hours of work that will need to be completed. At the beginning of a sprint, the "Hours Remaining" line is almost always below the "Ideal Burndown" line, indicating that the team is working faster than expected. However, on January 17-21, there were some tasks that kept the "Hours Remaining" line above the "Ideal Burndown" line. This causes some tasks not to be completed until the end of the sprint. This is because there are tasks that take a long time to do, thus making the next task work delayed and cannot be completed. There are currently 139 hours of unfinished work. This indicates that there are some tasks that cannot be completed yet and require further attention to ensure all work can be completed on time.

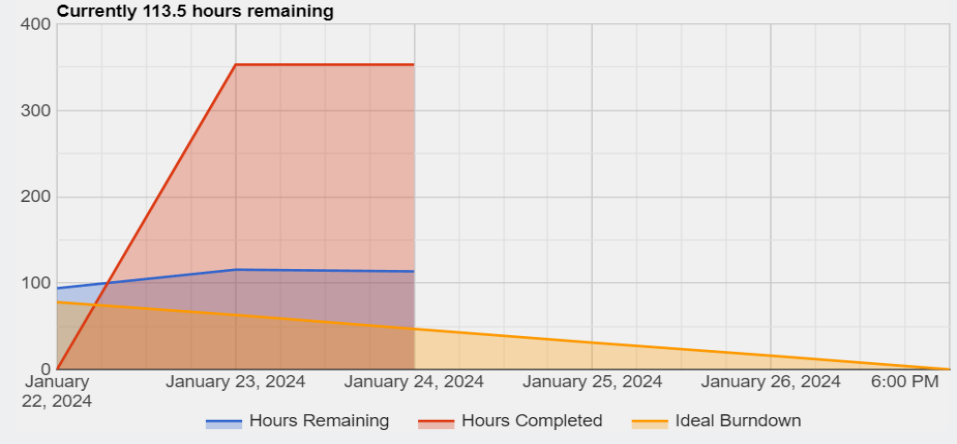

Figure 4. burndown chart sprint 4

At the start of the sprint on January 22, 2024, the team estimates there are about 400 hours of work to be completed. Initially, the team worked quickly, so the number of remaining man-hours was below the ideal estimate. However, on January 23, the team encountered several tasks that took longer to complete. This leads to an increase in remaining work hours

and some tasks cannot be completed until the end of the sprint. At present, there are still 113.5 hours of unfinished work. This indicates that there are some tasks that cannot yet be completed and require further attention. However, keep in mind that this sprint has not yet reached the deadline for completing tasks. Therefore, there is still the possibility of completing all the remaining tasks.

The team needs to keep working and strive to complete all unfinished tasks before the task completion deadline. Please note that this is temporary data and may change over time. Therefore, the team needs to continuously monitor the progress of work and make adjustments if needed to ensure all work can be completed on time.

Sprint review

The next phase carried out is the sprint review. This phase discusses what teams from all sprint backlogs have done to review the increments and change the Product Backlog if necessary. Here are the results of the sprint review from sprint 1 to sprint 4.

In Sprint 1, the steps are as follows: First, perform Admin Login to access the system.

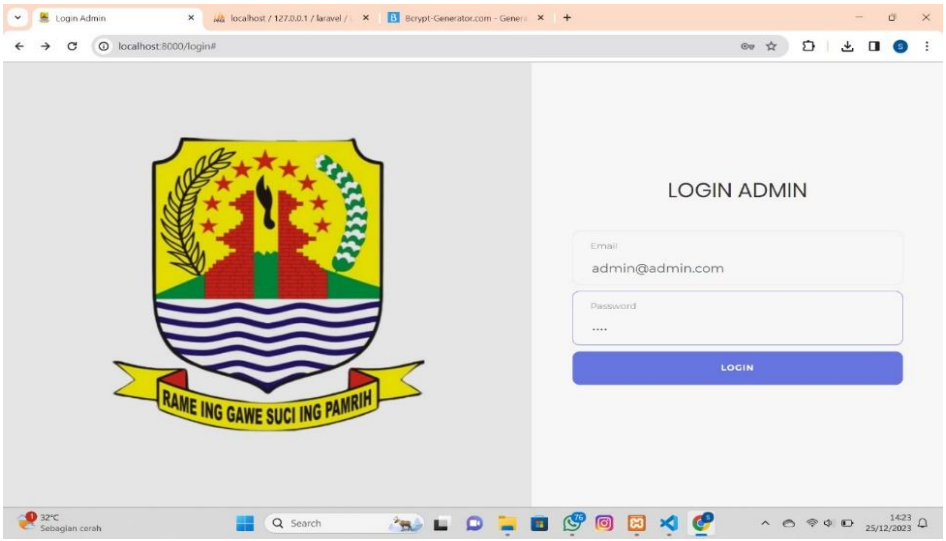

Figure 5. Login Admin

Then, display the existing village apparatus position data. Next, add a new village apparatus position to the system. After that, delete the village apparatus position data that is not needed. Followed by displaying the overall village device data. Next, add new village device data into the system. If there are changes to the village device data, perform the data editing process. If there is village device data that is no longer relevant, delete the data. Next, display the details of a village device data. Next, it displays the agricultural data present in the system. If there is new agricultural data, add to it. If there are changes to the farm data, edit the data. If there is agricultural data that is no longer relevant, delete the data. Continue by displaying the farm data present in the system. If there is new farm data, add to it. If there are changes to the

farm data, edit the data. If there is farm data that is no longer relevant, delete the data. Next, display the plantation data that is in the system. If there is new plantation data, add to the data. If there are changes to the plantation data, edit the data. If there is plantation data that is no longer relevant, delete the data. Followed by displaying fisheries data in the system. If there is new fisheries data, add to the data. If there are changes to the fisheries data, edit the data.

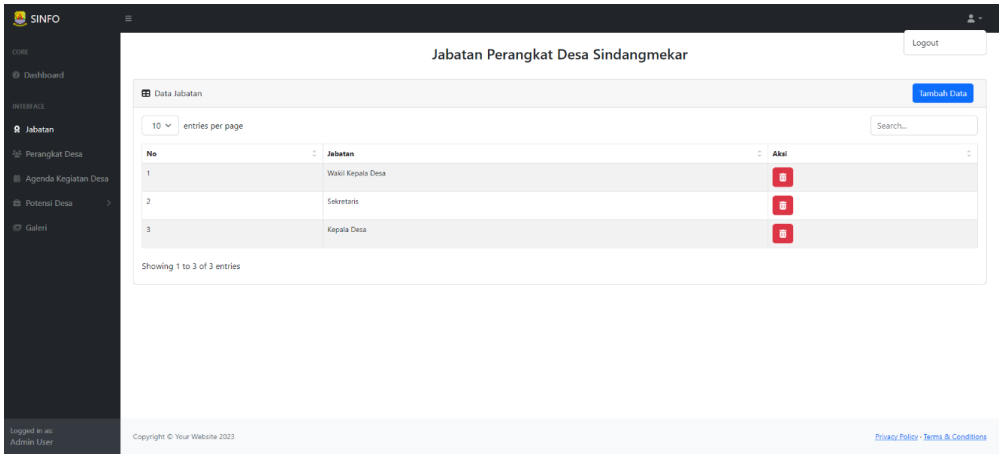

Figure 6. Logout

If there is fisheries data that is no longer relevant, delete the data. Finally, log out to log out of the system.

In Sprint 2, there are several pages developed. First, the Landing Page which is the main page of the system. This page usually contains important information and links related to the system or application.

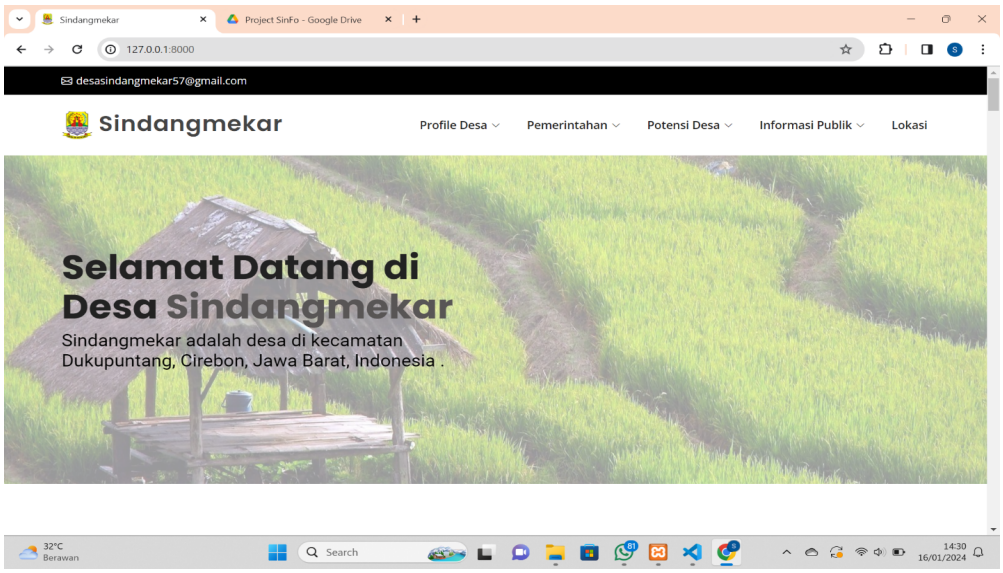

Figure 7. Landing Page

Furthermore, there is an About Us Page that serves to provide information about the background, vision, mission, and values of the related organization or project. The Vision & Mission page presents the long-term vision and mission of the organization or project. The Organizational Chart page shows how the organizational structure is formed by displaying charts or information about existing departments, teams, or roles. Furthermore, there is a Village Device Page which contains information and details about village devices used in the system. As shown below:

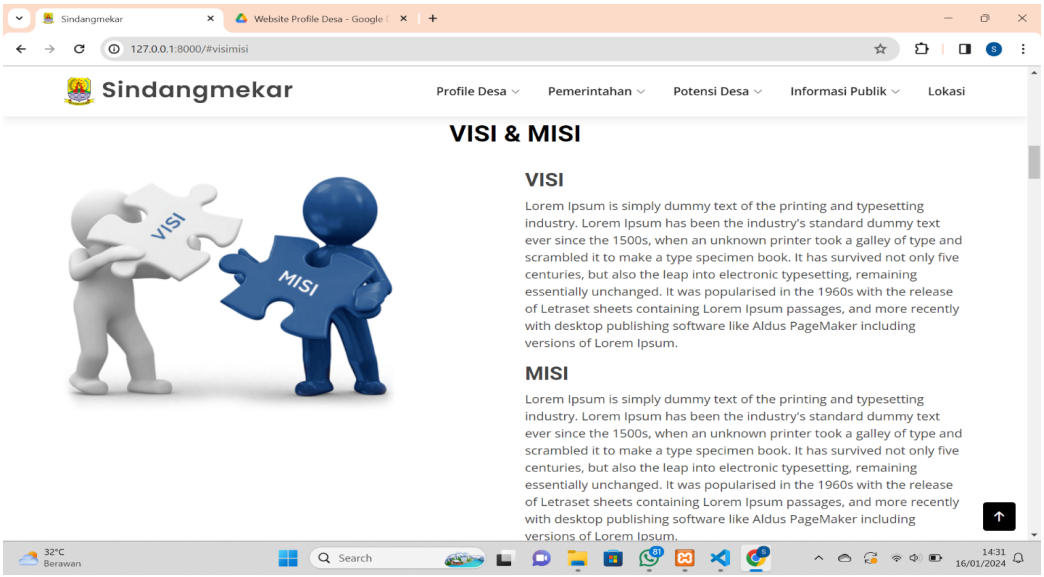

Figure 8. Vision & Mission page

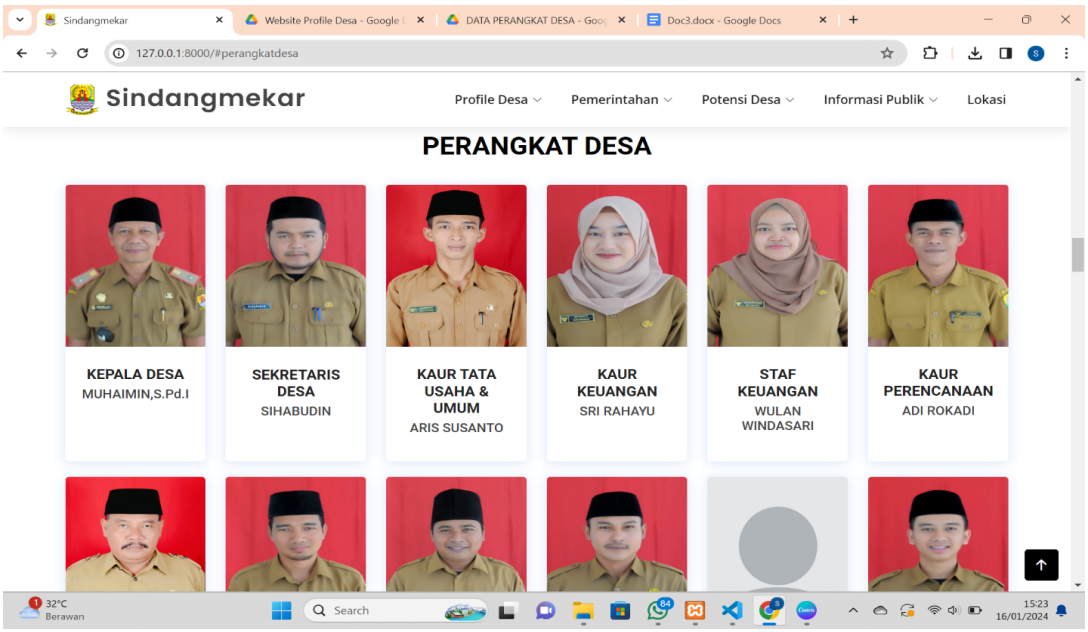

Figure 9. Village Apparatus Page

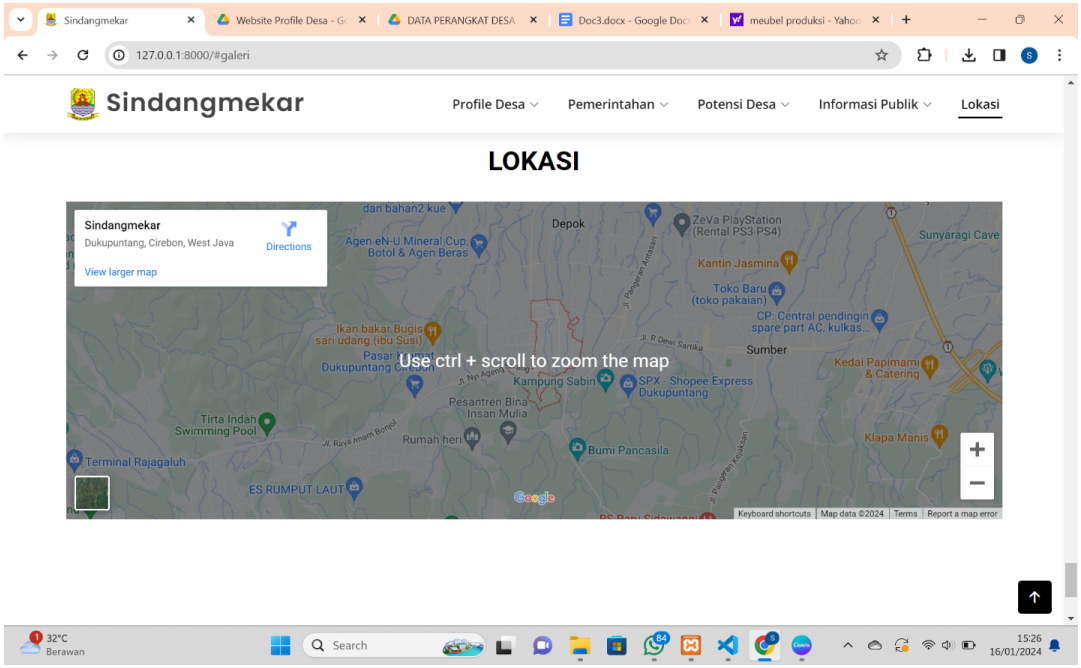

Figure 10. Location page

Finally, there are Location Pages that provide geographic information or maps relevant to the village or region. The development of these pages aims to provide a more complete and informative use for users of such systems or applications.

In Sprint 3, the focus of development is on features related to the village activity agenda. The steps taken include: First, implementing the display of village activity agendas in the system. This allows users to see a list of scheduled village activities. Next, add a feature to insert

a new village activity agenda into the system. Users can fill in information related to activities, date, time, and location. Followed by the development of detailed village activity agendas, where users can see detailed information about an activity agenda including descriptions, participants, and documentation related to the activity. Furthermore, improvements were made to the display of agricultural, livestock, and plantation data reports. This feature allows users to view reports related to important data in agriculture, animal husbandry, and plantations in the village.

In Sprint 4, there are several development steps carried out. First, an admin dashboard view was developed that provides better access and control for admins in managing the system. Furthermore, the focus of development was on the photo features of the village gallery. In this case, the development of a village gallery photo display that allows users to see a collection of village-related photos. In addition, a feature is added to add photos to the village gallery, so users can update and enrich the gallery content. Furthermore, a feature was developed to remove photos from the village gallery, giving users the ability to organize and manage gallery content as needed.

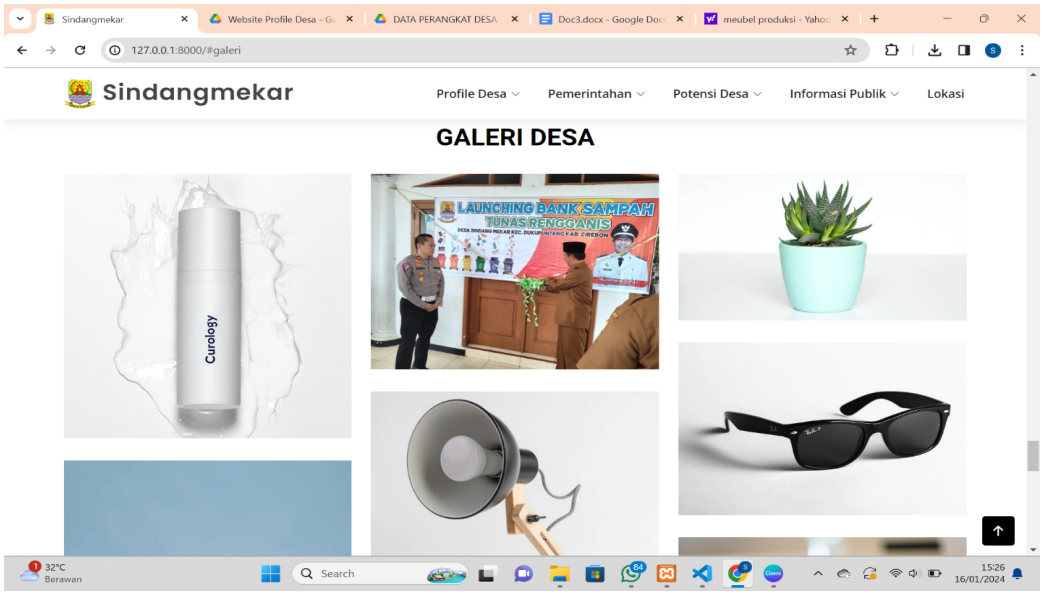

Figure 11. Village Gallery Page

In addition, an activity agenda page was developed that allows users to see a list of scheduled activities in the village. Finally, the development of a village gallery page that displays photos that have been uploaded by users. With these development steps, users can easily access and manage activity agenda content and village galleries through the system.

CONCLUSION

It can be concluded from this RPL task research Sindangmekar Information Application Development (SinFo) based on a case study website in Sindangmekar Village has been built using the Scrum method. Where this method can overcome changes in requirements during the system development phase and scrum has a looping stage where if the product in the first sprint is not enough to meet the needs, then in the next sprint a system can be developed in accordance with user evaluation.

BIBLIOGRAPHY

Ali, U., Shamsi, M. H., Bohacek, M., Purcell, K., Hoare, C., Mangina, E., & O'Donnell, J. (2020). A data-driven approach for multi-scale GIS-based building energy modeling for analysis, planning and support decision making. *Applied Energy*, *279*, 115834.

Arroyo, C. G., Knollenberg, W., & Barbieri, C. (2021). Inputs and outputs of craft beverage tourism: The Destination Resources Acceleration Framework. *Annals of Tourism Research*, *86*, 103102.

Erhan, L., Ndubuaku, M., Di Mauro, M., Song, W., Chen, M., Fortino, G., Bagdasar, O., & Liotta, A. (2021). Smart anomaly detection in sensor systems: A multi-perspective review. *Information Fusion*, *67*, 64–79.

Feng, Y., Duives, D., Daamen, W., & Hoogendoorn, S. (2021). Data collection methods for studying pedestrian behaviour: A systematic review. *Building and Environment*, *187*, 107329.

Hailiang, Z., Chau, K. Y., & Waqas, M. (2023). Does green finance and renewable energy promote tourism for sustainable development: empirical evidence from China. *Renewable Energy*, *207*, 660–671.

Ianioglo, A., & Rissanen, M. (2020). Global trends and tourism development in peripheral areas. *Scandinavian Journal of Hospitality and Tourism*, *20*(5), 520–539.

Karsa, A. H. A. N., Wahyuningsih, O., Jannah, R., & Saebah, N. (2024). Web-Based Car Rental Information System At Cv. Mandarental Cirebon. *Asian Journal of Engineering, Social and Health*, *3*(2), 374–380.

Knollenberg, W., Arroyo, C. G., Barbieri, C., & Boys, K. (2021). Craft beverage tourism development: The contributions of social capital. *Journal of Destination Marketing & Management*, *20*, 100599.

Knollenberg, W., Brune, S., Harrison, J., & Savage, A. E. (2022). Identifying a community capital investment portfolio to sustain a tourism workforce. *Journal of Sustainable Tourism*, *30*(12), 2806–2822.

Lee, C.-C., Wang, F., & Chang, Y.-F. (2023). Does green finance promote renewable energy? Evidence from China. *Resources Policy*, *82*, 103439.

Mirnaghi, M. S., & Haghighat, F. (2020). Fault detection and diagnosis of large-scale HVAC systems in buildings using data-driven methods: A comprehensive review. *Energy and Buildings*, *229*, 110492.

Pasanchay, K., & Schott, C. (2021). Community-based tourism homestays' capacity to advance the Sustainable Development Goals: A holistic sustainable livelihood perspective. *Tourism Management Perspectives*, *37*, 100784.

Phelan, A., Ruhanen, L., & Mair, J. (2020). Ecosystem services approach for community-based ecotourism: towards an equitable and sustainable blue economy. *Journal of Sustainable Tourism*, *28*(10), 1665–1685.

Razzaq, A., & Yang, X. (2023). Digital finance and green growth in China: appraising inclusive digital finance using web crawler technology and big data. *Technological Forecasting and Social Change*, *188*, 122262.

Riaboff, L., Shalloo, L., Smeaton, A. F., Couvreur, S., Madouasse, A., & Keane, M. T. (2022). Predicting livestock behaviour using accelerometers: A systematic review of processing techniques for ruminant behaviour prediction from raw accelerometer data. *Computers and Electronics in Agriculture*, *192*, 106610.

Rocca, L. H. D., & Zielinski, S. (2022). Community-based tourism, social capital, and governance of post-conflict rural tourism destinations: the case of Minca, Sierra Nevada de Santa Marta, Colombia. *Tourism Management Perspectives*, *43*, 100985.

Sundarakani, B., Ajaykumar, A., & Gunasekaran, A. (2021). Big data driven supply chain design and applications for blockchain: An action research using case study approach. *Omega*, *102*, 102452.

Wijayanti, A. (2020). Critical analysis on legal aid regulation for marginal community based on legal language. *TEST: Engineering & Management*, *8*(2), 2806–2814.

Wu, B., Gu, Q., Liu, Z., & Liu, J. (2023). Clustered institutional investors, shared ESG preferences and low-carbon innovation in family firm. *Technological Forecasting and Social Change*, *194*, 122676.

Zhang, W., Liu, X., Wang, D., & Zhou, J. (2022). Digital economy and carbon emission performance: Evidence at China's city level. *Energy Policy*, *165*, 112927.