Website for remote village empowerment in developing countries

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Abstract. The village is an area that has a low population density, homogeneous social interactions, works in the field of agriculture and is the lowest government body under the sub-district. The progress of a village varies, depending on its ease in exchanging resources for the lives of its people. Remote villages are villages that are difficult to exchange resources with other regions, so that growth is hampered. The presence of the internet is expected to be able to open access to information to empower disadvantaged villages, among others, by creating village websites. The website is one means of introducing villages to other regions, so that there is an exchange of products and cultures that increase the prosperity of the village. Based on this, the research aims to design a village website. The methodology used in this design uses the mechanism for designing object-oriented Unified Approach websites. This method provides two major stages, namely Object Oriented Analysis and Object Oriented Design, with the help of Unified Modelling Language (UML) modelling. The results of the study are village websites that provide information on agricultural products and processed products offered to other regions. Since this website can be accessed globally, information about the village can be spread throughout the world. Website information can be updated by village officials through training for six hours. System development can be done by providing consultation facilities between village officials and system makers. The conclusion of this study is that the village website produced can be used to provide information about the work of the village community so that it can be marketed to other regions. This website can also be integrated with school and marketplace web.

1. Introduction

Villages in developing countries are generally still traditional and difficult to progress because of the lack of information flow between villages and the environment outside the village. The internet is a technology that is expected to free the village from confinement, so that villages can communicate and carry out economic and cultural transactions with other places throughout the world. The existence of the internet that began to touch the village gave hope for the birth of a more empowered village. One of the uses of the internet by the village is the website. Village websites can be used to display village profiles: village government, village location, population, and results of activities that can be sold...
outside the village, as well as communication facilities between villagers. These hopes make the village need to use the website as well as possible, by digging information on all the potential of the village so that it can be displayed on the village web. Aside from being a means of communication, village websites are expected to be able to accommodate the results of the efforts of villagers in the form of a window on marketing their products more broadly [1,2]. Developing countries have characteristics: low per capita income, income inequality, still dependent on the primary sector, lack of utilization of natural resources, employment opportunities, and use of technology [3].

2. Methodology
Designing a village website using the Unified Approach (UA) method equipped with implementation and testing. The UA stage consists of Object Oriented Analysis (OOA) and Object Oriented Design (OOD) [4]. The implementation and testing stages are added so that the design results can be built and tested. The four stages of the method of designing this website are each described again into a smaller stage. The analysis phase consists of stages (1) Identification of actors; (2) Development of use case diagrams and activity diagrams; (3) Development of interaction diagrams; (4) Identification of classes, relations, attributes and methods; (5) Examination of the previous stage. The design phase is described into stages: (1) Class Design, Associations, Methods and Attributes; and (2) Building UML Class Diagrams. Implementation Phase includes stages: (1) Designing the Access Layer; (2) Designing the Interface Layer, and (3) Designing the Business Layer; (4) Construction of websites. The last stage of testing, is testing the function of the system through giving input and observing the results, whether they are as expected or not. The Work Breakdown Structure (WBS) [5] of the design method for village websites is shown in Figure 1.

![Figure 1. WBS design of the village website.](image)

3. Result and discussion
The results of the analysis at the actor identification stage, identified that: (1) the village head is PBA (Actor Business Primary), namely stakeholders who get measurable benefits from the system; (2) the head of the service section as a PSA (Primary System Actor) or the main system actor, is a stakeholder who is directly related to the system to trigger or control the running of the system; (3) the village community as an ERA (External Receiving Actor) or recipient actor, is a stakeholder who is not the
main actor, but only receives measured values in the form of reports from system users [6]. The use case diagram describes the interactions between actors and village websites. The village website displays a login menu, profile, vision and mission, potential, village government organizational structure, news, and a menu of comments and suggestions. Figure 2 shows the village website use case diagram.

![Use case diagram of the village website.](image)

**Figure 2.** Use case diagram of the village website.

Also obtained are activity diagrams, interaction diagrams for the login process, opening village profile menus, vision and mission, potential, organizational structure, news, comments and suggestions. Activity diagrams for the village profile menu are shown in Figure 3.

![Activity diagram of profile menu.](image)

**Figure 3.** Activity diagram of profile menu.
The results of class identification, relations, attributes and methods were obtained by the class from the village profile, vision and mission, potency, organizational structure, news, comments and suggestions [7]. The relationship between the admin and the menu on the website has one cardinality to many. Each class from the village profile, vision and mission, potential, organizational structure, news, comments and suggestions have attributes and methods. The Component Based Development stage is determined by the access layer, business, and interface for logins, profiles, vision and mission, potential, organizational structure, news, and comments and suggestions [8]. Figure 4 shows the layer access, business, and interface for the village website [9].

**Figure 4.** The layer access, business, and interface for the village website.

The stages of testing the system are designed to find out whether the functional system (all menus) has been running as it should. Tests carried out on the village system or website include data entry by the administrator or website access by the user. The test results show that all website functions are running as expected. Figure 5 shows the display for the website administrator. Figure 6 shows a view of the organizational structure of the village government.
4. Conclusion

Making this website uses the UA method and is done until the testing or testing stages through black boxes. This website application is made for Wanamekar Village in delivering and publishing information to the public quickly; this website application that has been built successfully displays how much information such as village profiles, news, and suggestion boxes addressed to website accessory.

The village website will be successful if village officials and the community together maintain and use it. A website is only a tool, if there is no human who is skilled and earnest behind it will be a meaningless item [10].

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