

Development of Information Systems in the Jayapura Regency Regional Disaster Management Agency

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Article Info	ABSTRACT
Corresponding Author: Name : Vriska D.S.Rimindubby E-mail: vriska.ds.rimindubby@mail.ugm.ac.id	<p>BPBD Jayapura Regency is a government agency that coordinates and handles disaster issues in the Jayapura Regency. Jayapura Regency has geographical, geological, hydrological, and demographic conditions that have the potential for disasters that need to be handled both pre-disaster, during emergency response, and post-disaster. Disaster information delivery, both knowledge about disaster or disaster reports to the community, information on BPBD activities, and news about BPBD is currently carried out through socialization in the community. So that there are often many conflicts due to incorrect news in the community related to BPBD's work programs, besides that BPBD Jayapura Regency itself does not yet have an integrated communication media that is directly connected to the people of Jayapura Regency. System An Information system in the form of a website was built to help related parties, namely BPBD Jayapura Regency and the community to be directly connected. This system was built using XAMPP as a web server and MySQL as a database server using the SQL programming language, PHP programming language is run on the server side so that the website becomes more dynamic. The analysis method used Use Case Diagram as a description of interactions that occur in the system. This system provides disaster reporting and complaint services This system also helps the BPBD in displaying information related to BPBD and disasters. This system will display information to the community and access to view disaster data reports that occur in the village added by each village or district head in Jayapura Regency.</p> <p>Keywords: BPBD Information System, BPBD Website, BPBD Jayapura Regency, Disaster Information, Programming.</p>

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INTRODUCTION

Website is one of the media information which always expands requirement information in every part and Website can be accessed using gadgets, or other electronic devices such as computer and laptops. According to Elul as quoted by Miarso (2007), states that technology is the whole of the method that rationally leads and has characteristics of efficiency in every field of human activity. A trusted source is highly required to steer clear of misleading information to the public. A quick and on-target delivery of information is needed, so that the public can be on the qui vive and have time to make a rescue (Prasojo & Zuhri,2011).

The Regional Disaster Management Agency is a government agency or agency that is engaged in dealing with disaster problems in a government area. As a government agency engaged in dealing with disaster issues and serving the community, BPBD is connected with the public through communication and has various kinds of information needed by the public in

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dealing with disasters in the area. Accordingly, the Jayapura Regency BPBD which handles disaster issues, the Jayapura Regency BPBD has various kinds of information such as BPBD profiles, organizational structure, activities carried out by BPBD, information to the public about ways to deal with disasters, and other information. BPBD Jayapura Regency has a large enough working area so that it can be connected to the public, even people who are living in hard-to-reach areas. The role of the media is indispensable in the context of disseminating information. The media used to connect with the community and in conveying information is WhatsApp or the BPBD employee's telephone number. Apart from that, to find out information or report a disaster that has occurred, the public can directly report it by coming to the BPBD Office. Another media used by BPBD Jayapura Regency is through an approach in the community, namely outreach. Another problem is the lack of human resources working at BPBD Jayapura Regency and inadequate facilities. Based on these problems, this research will build the Jayapura Regency Regional Disaster Management Agency Website which provides various information sets for people who need information such as information about the Jayapura Regency BPBD and information about disasters and helps bridge communication between the Jayapura Regency BPBD and the community through an information system that integrated.

Based on the research background that has been discussed, the formulation of the research problem is as follows.

- a. Submission of information such as disaster information, and information about the Jayapura Regency BPBD activities was conveyed verbally when socialization and simulations were held, this information could only be received by the people who took part in the socialization, so there were many misunderstandings in the public and eventually led to conflicts about the work programs carried out by the Jayapura Regency BPBD.
- b. Reporting or complaints about the disaster and the work program of the Jayapura Regency BPBD by the public via WhatsApp or the telephone number of the Jayapura Regency BPBD employee so that the public doesn't have clear and definite access to connect with the Jayapura Regency BPBD.
- c. The lack of workers who are working in the BPBD Jayapura Regency office and inadequate facilities so that the Jayapura Regency BPBD has difficulties in carrying out BPBD work programs such as simulations and outreach.

Based on the research topic and the formulation of the problem, the objectives expected to be achieved from this research activity are.

- a. Analyzing and producing a website for a government agency that provides information about disasters in which there is information about BPBD profiles, BPBD activities, information, and publications, as well as providing integrated access for the public to connect with the Jayapura Regency BPBD through the website.
- b. Provide alternative technology recommendations for areas without communication networks.

The research limitations in making this system are as follows.

- a. The research location is BPBD Jayapura Regency, Papua Province.
- b. Presentation of information and data in Jayapura Regency BPBD includes BPBD Jayapura Regency profiles such as the Jayapura Regency BPBD Office address, BPBD Office contacts, information on activities and news about BPBD work programs, complaints and reports by the public, related links and contacts regarding the disaster, and education disaster.
- c. Web-based built system.
- d. The languages used are PHP and MySQL.

The benefits that are expected to be obtained from this research are to expand and improve knowledge related to natural disaster management, and it can become media information and

communication for the public to connect with the Jayapura Regency Regional Disaster Management Agency directly and integrate.

The formulation and system of this research have never been done before in that government place or agency. Articles cited and used as references in this research are used as research supports and references. More clearly can be seen in Table 1.

Table 1: Research originality.

NAME	TITLE	DISCUSSION	RECENCY
Krug, Steve. 2013	Don't Make Me Think!	Graphic designers and developers face responsibility for designing the interface (interface) things like interaction design (what happens next when the user clicks) and information architecture according to the user. (how everything is arranged).	The concept from this library is used as a reference in designing the BPBD Jayapura Regency website that is suitable for users
Lenny, 2022	The Results of interviews with BPBD Jayapura Regency in an internship with the theme Evaluation of Natural Disaster Management Information and Communication Systems at BPBD Jayapura Regency.	The lack of workers, and facilities, and the unavailability of media information to convey information to the public hampered several BPBD work programs, and conflicts occurred in the community due to the spread of misinformation.	This statement was used as the basis for creating a web-based information system in an effort to support the Jayapura District BPBD in delivering disaster information and connecting with the public.

METHOD

This research is located at the Regional Disaster Management Agency Office of Jayapura Regency, the Regent's Office Complex, Red Mountain, Sentani-Jayapura-Papua. This research is a development of an internship activity conducted at the Jayapura Regency BPBD office with the theme Evaluation of Natural Disaster Management Information and Communication Systems at the Jayapura Regency Regional Disaster Management Agency.

The data used in making this website is data from the Jayapura Regency BPBD regarding profiles, activities in each field, news, information, and publications in the form of photos, videos, and documents related to the Jayapura Regency BPBD. The data was obtained from the results of research at BPBD Jayapura Regency.

A Use Case Diagram.

A Use Case Diagram is a description of the interactions that occur within the system which functions to determine the functional requirements of the system. In the information system that will be built, there are 3 users, namely administrators, Jayapura Regency BPBD staff, sub-district heads or village heads, and website visitors. Admin can add, read, edit, and delete data on profile pages, activities, news, information, and publications. The admin will also confirm the disaster reports that will be made by each village head, besides that the admin can also see reports of disaster events or complaints inputted by website visitors. The sub-district head or village head can input disaster data such as damage and casualties due to the disaster that occurred in the village. Website visitors can view website pages and input disaster incident reports or complaints.

The Data Flow Diagram.

The Data Flow Diagrams are used to explain the flow of data from one process to another. This diagram is a design logic model of an information system that explains to the user how the functions in an information system are made to work. The context diagram for the BPBD Jayapura Regency website can be seen in Figure 1.



Figure 1. BPBD website context diagram Jayapura Regency

Database Design.

The database is a collection of data that is stored in a structured manner in the form of files (tables), which have a relationship between one file and another according to the information that needs to be served. To design a complex and relatively large database, the design is not too easy or even difficult to implement directly, it is necessary to use a method to design a database. The method to be used in designing the BPBD Jayapura Regency website database is the entity-relationship model.

Web Interface Design.

The website design consists of several parts. In the header section, there is a menu bar that can be clicked or selected, there is also a login button for the admin to enter the system. The initial appearance of the website contains the Jayapura Regency BPBD logo, carousel, latest news, galleries, related links, information, and contacts of the Jayapura Regency BPBD. The design of the website page can be seen in Figure 2.

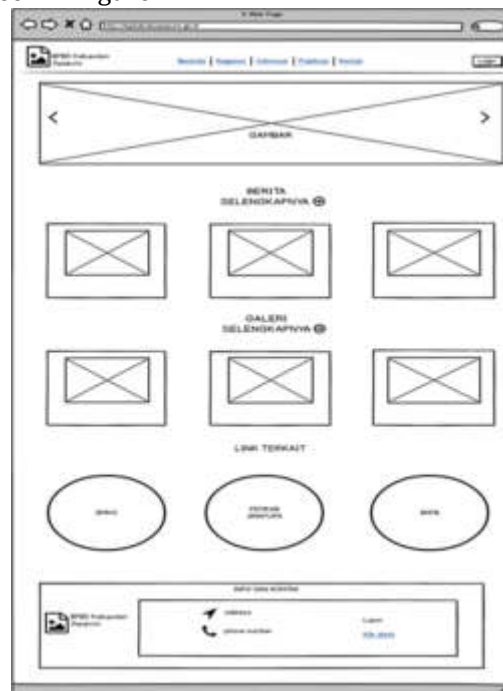


Figure 2. Design of the Jayapura Regency BPBD website interface

RESULTS AND DISCUSSION

Implementation of Interface Design.

The application of the system is carried out in accordance with the system design that has been described in the research method. The database used is MySQL and the programming language used is PHP. The appearance of the website can be seen in Figure 3. On the header, there is the logo of BPBD Jayapura Regency, the menu bar contains several website pages with the information needed by the public, and there is a login for the admin and village head. In the contents section there is a hyperlink InaTEWS (Indonesian Tsunami Early Warning System) so that website visitors or the public can find out information on earthquakes and tsunamis that are happening in an area when opening the BPBD Jayapura Regency website page. The website home page also contains the latest news from the Jayapura District BPBD, galleries, and related links that web visitors can click on. In the footer section, there is the Jayapura District BPBD address. The Profile page contains information on the vision and mission as well as the organizational structure of BPBD Jayapura Regency. The activity page is divided into 3 sections which contain information on activities from each field of work in the BPBD Jayapura Regency. The Information page contains news and information published by BPBD Jayapura Regency. The Publications page contains BPBD publications in the form of photos, videos, and documents. The Contact page contains a map of the Jayapura Regency BPBD office, and the Report Page contains information in the form of a table of natural disaster events in the Jayapura Regency area which were reported by each village head which contains information on damage to public facilities and casualties.

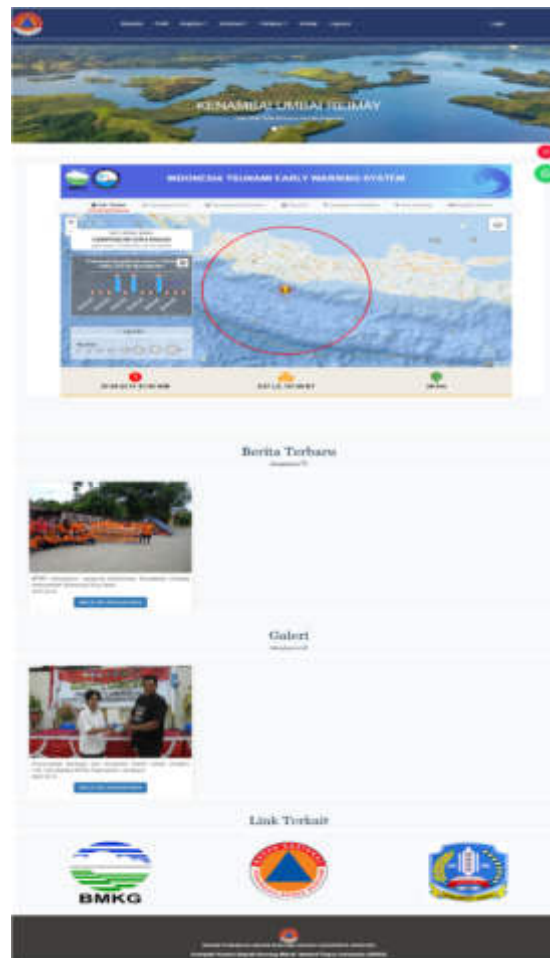


Figure 3. Display of The Jayapura Regency BPBD website home page

System Analysis.

BPBD Jayapura Regency has a wide administrative area. The geographical characteristics of Jayapura Regency are a challenge for the development of this web-based information system. To provide and convey information the system must be able to connect to the internet network. Several areas in the administrative area of Jayapura Regency do not yet have telecommunications networks. One of the inhibiting factors is the geographical location which is quite remote. So, it's necessary alternative telecommunication technology.

1. BTS (Base Transceiver Station) BTS is a set of wireless communication interfaces. BTS sends and receives signals so that messages or data circulation processes can occur. The BTS tower has access weaknesses when it rains, so it is necessary to have a program for installing fiber optic poles and cables connected to the existing BTS towers so that access via mobile phones will get good communication services. The construction and installation of BTS in areas that are difficult to reach can assist the community in accessing information and communicating with BPBD Jayapura Regency.
2. Internet via satellite, this internet is transmitted from the ground station to the satellite and then forwarded to areas that need it and don't need cables on the ground because it's via satellite. However, satellite technology according to its reliability also has an expensive cost.

Socialization of Website Introduction to the Public.

The introduction of the Socialization of the Jayapura Regency BPBD website to the public is a form of public development activity. The population of Jayapura Regency consists of several age groups, educational backgrounds, and occupations so there is a need for outreach to the society so that people can use the Jayapura Regency BPBD website according to its function to obtain information related to BPBD and also disasters, and can communicate with the Jayapura Regency BPBD.

CONCLUSION

The first aim of this research is to analyze the workflow and information flow processes at BPBD Jayapura Regency and build a website that can provide information related to activities, news about BPBD Jayapura Regency and disasters, and can be a media of communication or information delivery between BPBD and the people in Jayapura Regency. Based on the results of research and discussion the Jayapura Regency BPBD website that has been built has features consisting of a login process, management of disaster report master data for each village or district, warning events linked to InaTEWS, website data, and reports. The system built can provide convenience to related parties in managing disaster data. The existence of an incident report and complaint feature can facilitate communication and information delivery. The second objective of the research is to provide alternative technology recommendations for areas without communication networks. Based on this research, there are two alternative technology recommendations, namely the addition of BTS (Base Transceiver Station) which facilitates wireless communication and operator networks in areas without telecommunications networks, and the internet via satellite which is an internet network that is transmitted with the help of communication satellite channels. The availability of a telecommunication network in areas without a communication network can help the community to communicate and connect with the Jayapura Regency BPBD, as well as enable the public to access the Jayapura Regency BPBD website.

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REFERENCE

- Beaird, J. (2010). *The Principles of Beautiful Web Design* (2nd ed.). (K. Steele, Ed.) SitePoint Pty. Ltd.
- D, B., J, S., A, S., & J, V. (2001). *Object Oriented Analysis and Design Team*. Kennesaw State University.
- Johnson, J. (2013). *Designing with the Mind in Mind* (2nd ed.). Elsevier Science.
- Koniyo, A., & Kusriani. (2007). *Tuntunan Praktis Membangun Sistem Informasi Akuntansi dengan Visual Basic & Microsoft SQL Server*. (F. S. Suyantoro, Ed.)
- Krisbiantoro, D., & Abda'u, P. D. (2021). *Dasar Pemrograman Web dengan bahasa HTML, PHP, dan Database MySQL*. Banyumas: Zahira Media Publisher.
- Krug, S. (2013). *Don't Make Me Think*. Jakarta: Serambi Ilmu Semesta.
- Miarso, Y. (2004). *MENYEMAI BENIH TEKNOLOGI INFORMASI* (2nd ed.). Jakarta: PRENADAMEDIA GROUP.
- Nugroho, A. (2010). *Rekayasa Perangkat Lunak Berorientasi Objek dengan Metode USDP*. (O. HS, Ed.) Yogyakarta: ANDI OFFSET.
- Rachmadi S.Kom, T. (2020). *PENGANTAR TEKNOLOGI INFORMASI*. TIGA Ebook.
- Sutabri, T. (2012). *Analisis Sistem Informasi*. Yogyakarta: ANDI OFFSET.
- Weideman, M. (2009). *Website Visibility The theory and practice of improving rankings*. Chandos Publishing.