



Design And Construction of Simpang Empat Village Public E-Service Using Mobile-Based Extreme Programming Method

Mayang Zahra Zoelkifli¹, Samsudin², Heri Santoso³

^{1,2,3}Sistem Informasi, Sains dan Teknologi, Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

Email: mayangmayang496@gmail.com¹, samsudin@uinsu.ac.id², herisantoso@uinsu.ac.id³

Abstract

The E-Community Services application is a website and Android-based application that can be used to overcome several problems in community affairs in the Simpang Empat Village government. Some of the matters that can be handled using this application are Single NA Management Letters, Divorce/Death NA Management Letters, Business License Letters and various other letters. This E-Community Services application also provides security and infrastructure features for the community. The type of research used by the author in this research is Qualitative Research and the System Development Method used is the Extreme Programming (XP) method. With data collection techniques consisting of Observation, Interviews and Literature Study. The E-Community Services application that was built has succeeded in helping to overcome various problems in the Simpang Empat Village government. The results of system testing also obtained very good results, so it can be concluded that the system is running well according to the results of the testing and validation that has been carried out.

Keywords: E-Community Services, Extreme Programming, Website, Android

1. Introduction

The development of information and communication technology such as the use of smartphones and the internet is the most prominent technological advancement in Indonesia [1]. Unlike a few years ago, the comparison of information and communication technology today is different. There are several reasons why this is different. For example, the use of mobile devices with various applications that allow sending messages with one click has become a more common way to provide services to users [2].

Simpang Empat Village is one of the villages in Simpang Empat District, Asahan Regency. The Simpang Empat Village Government is led by the Village Head who is assisted by the village secretary, 3 Section Heads, 3 Heads of Affairs and 14 Hamlet Heads. The duties of the village office towards the community include organizing village government, community development, village development, community empowerment, establishing partnerships and serving the needs of the community related to the village office [3]. Every community in the village will receive services from the village office including administrative services, health, education, infrastructure, social, economic, security and order. Administrative Services, namely Population Registration and Civil Registration (birth, marriage, death, etc.) [4].

Issuance of administrative letters, management of village data and information. Health services, namely the provision of village ambulances. Education services, namely the issuance of certificates of poverty. Infrastructure services, namely the maintenance of bridges, roads and irrigation channels, provision of clean water and sanitation, and waste management. Social services, namely providing guidance to the community, for example, techniques for solving problems that occur in the field, both from civil, criminal and family cases. Economic services, namely the issuance of business permits. Security and



Order services include the management of security and order at the village level and protection of the community from crime and fire.

In previous research, namely Satya et al [5] on the Development of Public Service Systems Through Population Administration Systems Using the Extreme Programming Method, the difference with the author's research lies in the title, objects served and place of research. The development that the researcher wants to make is to create a mobile-based application. Next is the research conducted by Septiani and Habibie [6] on the Use of the Extreme Programming Method in the Design of Public Service Information Systems, the difference with the author's research lies in the title, objects served and place of research. The development that the researcher wants to make is to create a mobile-based application.

The problem that occurs is that the service provided must be done by coming directly to the village office, so that people who want to get service must queue and wait until their business is finished. On the other hand, the service provided is relatively slow because of the queue procedure and a lot of data recording. Therefore, a method is needed that can help the Simpang Empat village office in serving the community. The application is made using Android programming and uses the MySQL database as data storage and processing. However, a method is needed that can maximize the creation of e-service applications so that they become better. This study uses the Extreme Programming method. Extreme Programming (XP) is a software development methodology that improves software quality according to customer developments and needs. There are several stages in Extreme Programming, namely Planning, Design, Coding, Testing [7], [8].

2. Research Methodology

2.1. Data Collection Method

In conducting this research, the researcher used a qualitative method to obtain data that meets the researcher's needs [9]. The object of this research is the system that is still running at the Simpang Empat Village Office. Therefore, the researcher focuses more on the system that is still used by the community and village officials in certain activities. The data collection techniques used to complete this research are:

(a) Observation

The researcher conducted observations at the village office to find out the problems that occurred related to services to the community.

(b) Interview

The researcher conducted an interview with the Village Head to find out more details about the problems that occurred.

(c) Literature Study

The researcher used references for theories related to the research. The references are in the form of previous research journals.

2.2. System Development Method

The method used for the development of Information Systems in this study is the Extreme Programming (XP) method. Application development with this method is carried out sequentially following five stages, namely Planning, Design, Coding, Testing [10].

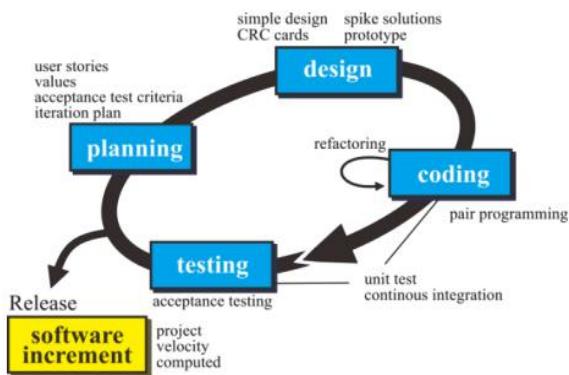


Figure 1. Extreme Programming Stages

3. Results and Discussion

3.1. Use Case Diagram

In compiling a program, a data model is needed in the form of a diagram that can explain the process flow of the system to be built. So, draw a Use Case diagram that can be seen in Figure 2 [11].

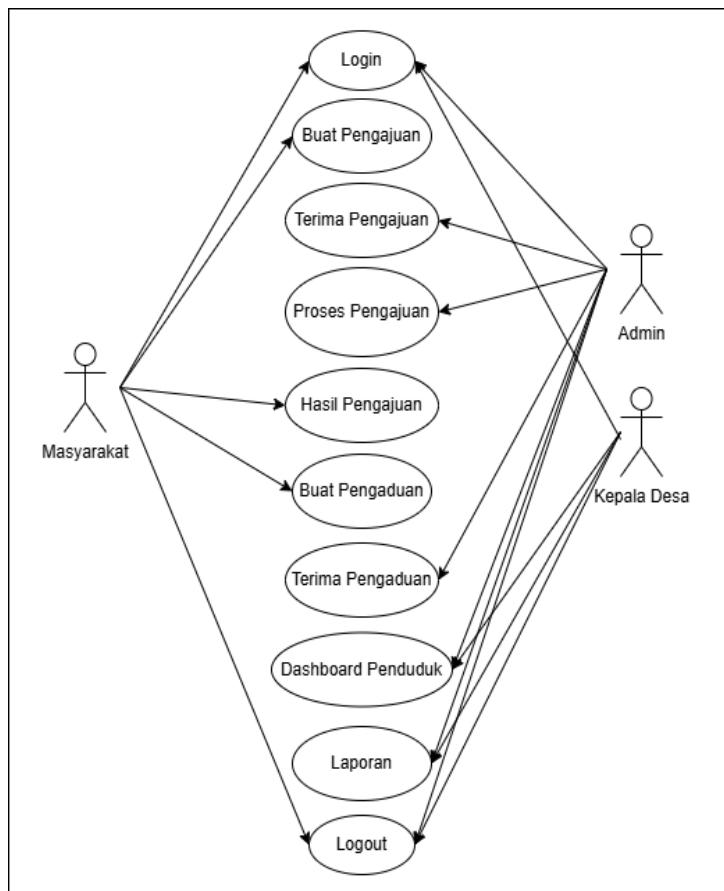


Figure 2. Use Case Diagram

3.2. Implementation

(a) User Login Display

On the Login page, users can enter their registered email and password to access the features available on the application. Here is the Login page display on the application.



Figure 3. User Login Display

(b) Home Page Display

On the menu page, the application will display several features and options that are available. For the admin user type, it consists of submission features, village news, complaints, residents and reports. For the community user type, it consists of administrative, health, education, infrastructure, social, economic, and security features. And for the village head user type, it consists of residents and report features. The following is the menu page display on the application.

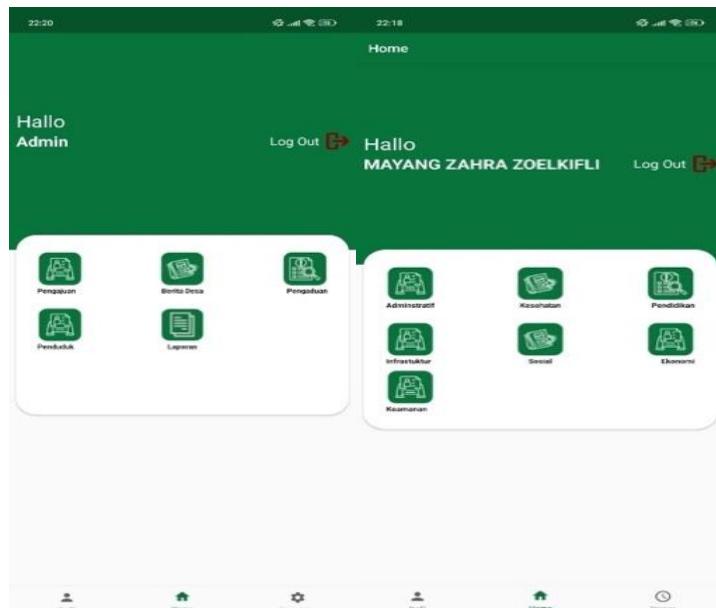


Figure 4. Home Page Display

(c) Report Page Display

On the report page, the admin and village head user types will display data on the type of submission, applicant, submission time and status. The following is the report page display on the application.



Figure 5. Report Page Display

(d) Administrative Page Display

On the administrative page, the user type will display the NA Marriage Administration Letter, Domicile Letter, Death Certificate, Birth Certificate, and SKCK Cover Letter. The following is the administrative page display on the application.

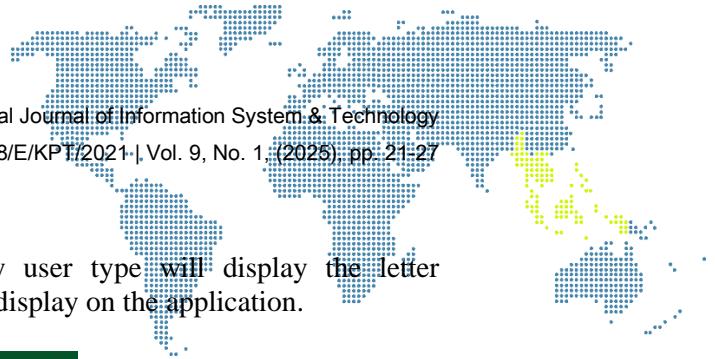


Figure 6. Administrative Page Display

(e) NA Marriage Letter Page View

On the NA marriage letter page, the community user type will display data on name, place of birth, date of birth, religion, occupation, NIK, address, male candidate ID card, female candidate ID card, male candidate photo, and female candidate photo. The following is the appearance of the NA marriage letter page on the application.

Figure 7. NA Marriage Letter Page View



(f) Progress Page Display

On the progress feature page, the community user type will display the letter submission data. The following is the progress page display on the application.



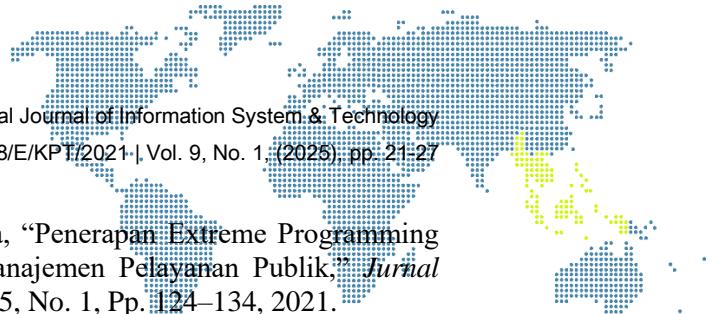
Figure 8. Progress Page Display

4. Conclusion

Based on the discussion presented in the previous chapter, several key conclusions can be drawn. First, the Extreme Programming (XP) system development methodology was successfully implemented in the design of the Simpang Empat Village community e-service platform. The XP approach proved effective in delivering a functional software solution within a four-month development timeline, in accordance with the implementation schedule outlined in the previously developed Collaborator Class Responsibility (CRC) model. This demonstrates the XP method's capability to facilitate rapid and efficient system development. Second, the community e-service system is specifically designed to address various administrative needs related to public services in Simpang Empat Village. The platform enables users to submit applications for a wide range of documents, including letters for single status verification (NA Lajang), divorce status due to death or separation (NA Cerai Hidup/Meninggal), business permits, proof of residence, death certificates, birth certificates, disability statements, and cover letters for police clearance (SKCK). In addition to these services, the system features a secure infrastructure and complaint forum that allows residents to express their concerns and aspirations. Furthermore, the public can access relevant social data through the system, enhancing transparency and community engagement.

References

- [1] P. Dwima Ernis And P. Pirdaus, "Dampak Teknologi Artificial Intelligence Pada Profesi Akuntansi," *Ekoma : Jurnal Ekonomi*, Vol. 2, No. 1, 2022.
- [2] C. A. Cholik, "Perkembangan Teknologi Informasi Komunikasi / Ict Dalam Berbagai Bidang," *Jurnal Fakultas Teknik*, Vol. 2, No. 2, Pp. 2746–1209, May 2021.
- [3] A. Pertiwi, H. Dema, A. Mustanir, And E. Anugrah, "Penerapan E-Government Dalam Mewujudkan Transparansi Tata Kelola Pemerintahan Desa (Studi Pada Pemerintahan Desa Bulo Timoreng)," *Praja*, Vol. 9, No. 3, Pp. 130–139, 2021.
- [4] Y. Apriyani, "Kualitas Pelayanan Administrasi Di Desa Sabah Balau," *Jurnal Progress Administrasi Publik (Jpap)*, Vol. 3, No. 1, Pp. 17–23, 2023.



- [5] A. Nurkholis, E. R. Susanto, And S. Wijaya, “Penerapan Extreme Programming Dalam Pengembangan Sistem Informasi Manajemen Pelayanan Publik,” *Jurnal Sains Komputer & Informatika (J-Sakti)*, Vol. 5, No. 1, Pp. 124–134, 2021.
- [6] N. A. Septiani And A. A. Ningsih, “Penerapan Customer Relationship Management Pada Penjualan Gas Medical Dengan Metode Extreme Programming,” *Jurnal Teknik Informasi Dan Komputer (Tekinkom)*, Vol. 5, No. 2, P. 309, Dec. 2022, Doi: 10.37600/Tekinkom.V5i2.654.
- [7] N. Sari And D. Cahyani, “Perancangan Sistem Informasi Monitoring Sertifikat Menggunakan Extreme Programming,” *Jurnal Ilmiah Computer Science*, Vol. 1, No. 1, Pp. 1–6, Jul. 2022, Doi: 10.58602/Jics.V1i1.1.
- [8] Moh. Fauzan And M. Noor Al Azzam, “Implementasi Metode Extreme Programming Pada Aplikasi Pengelolaan Sewa Mobil Berbasis Web,” *Smartics Journal*, Vol. 9, No. 2, Pp. 79–85, Nov. 2023, Doi: 10.21067/Smartics.V9i2.8890.
- [9] M. Rijal Fadli, “Memahami Desain Metode Penelitian Kualitatif,” *Humanika, Kajian Ilmiah Mata Kuliah Umum*, Vol. 21, No. 1, Pp. 33–54, 2021, Doi: 10.21831/Hum.V21i1.
- [10] M. Fauzan, M. Noor Al Azzam, J. Arief Rahman Hakim No, And J. Timur, “Implementasi Metode Extreme Programming Pada Aplikasi Pengelolaan Sewa Mobil Berbasis Web,” *Smartics Journal*, Vol. 9, No. 2, Pp. 79–85, 2023.
- [11] S. Samsudin, N. Nurhalizah, And U. Fadilah, “Sistem Informasi Pendaftaran Magang Dinas Pemuda Dan Olahraga Provinsi Sumatera Utara,” *Jurnal Teknologi Dan Sistem Informasi Bisnis*, Vol. 4, No. 2, Pp. 324–332, Jul. 2022, Doi: 10.47233/Jtekris.V4i2.489.