



# Digital Service of Practice licensing for Medical Personnel and Health Facilities with Dashboard System

**Domi Sepri<sup>1,\*</sup>, Ahmad Fauzi<sup>1</sup>, Suci Eka Putri<sup>2</sup>**

<sup>1</sup>Faculty of Science and Technology, Information System, UIN Imam Bonjol, Padang  
Jl. Prof. Mahmud Yunus Lubuk Lintah, Anduring, Kec. Kuranji, Kota Padang, Sumatera Barat, Indonesia

<sup>2</sup>Faculty of Health Public, Nutrition Science, Teuku Umar University, Meulaboh  
Jl. Alue Peunyareng, Gunong Kleng, Kec. Meureubo, Kabupaten Aceh Barat, Aceh, Indonesia

Email: <sup>1,\*</sup>domisepri@uinib.ac.id, <sup>2</sup>ahmadfauzi@uinib.ac.id, <sup>3</sup>suciekaputri@utu.ac.id

Correspondence Author Email: domisepri@uinib.ac.id

Submitted: 14/10/2023; Accepted: 25/10/2023; Published: 26/10/2023

**Abstract**—Health workers in the rules must have a requirement in the form of a Practice License in carrying out medical and health activities at a medical practice site. Likewise, health facilities that want to open medical practices must be recorded and have a license to practice issued by the local district / city Health Office. The license to practice medical personnel and health facilities so far in the city of Bukittinggi in the service process is still done manually, making it ineffective for data management and difficult to obtain information. Therefore, a technological innovation is needed for the process of digitizing the service of issuing a web-based license to assist the process of licensing services for licenses to practice medical personnel and health facilities that are fast and effective in producing such correspondence needs. This web-based application was developed using the waterfall model because the stages of the process are passed step by step to get good results. This application on the main page is also displayed with the concept of a dashboard system, making it easier for users to view general data in the application such as data on medical personnel and health facilities that will expire their medical licenses. This application has been tested and used for services to the government and helps in the process of correspondence and evaluating the control process on the licensing of health workers.

**Keywords:** Information System; Licensing Of Medical Personnel; Health Facilities; Waterfall Model; Web Application

## 1. INTRODUCTION

Health workers are professionals who have certificates of competence in carrying out their activities in the health and medical fields. The Ministry of Health in providing recommendations for licenses to practice and work in the health sector provides rules that every medical personnel must be actively registered as health workers as evidenced by ownership of an STR number (registration number) as a sign of certified competence in the medical field[1]. In addition to having to have an STR number, health workers when they want to work in a health institution or practice place must have a Practice License issued (SIP) by the district / city health office. This SIP is a special requirement that must be owned by a medical personnel in working in a maximum of three existing medical facilities. This SIP is what legalizes the medical practice of doctors in practicing in hospitals, clinics or other health facilities.

In the category of health facilities such as hospitals, clinics and healthy homes that want to carry out the medical practice process, the owner of the health facility must report and obtain a recommendation letter for a license to practice from the local district / city Health Office. This is so that the process of controlling the activities of medical practices continues to be well monitored by the government. With the policy that there must be a SIP in opening a medical practice site, health facilities do not arbitrarily open and close medical activities, because they are monitored and evaluated by the health office as a regulator monitoring the activities of health facilities in a district / city.

The Bukittinggi Health Office is responsible for managing the health sector in the city. The Bukittinggi health office in digital services has implemented digitalization in several fields, including implementing a Web-based Water Examination Service Management System at the Bukittinggi City Health Laboratory UPTD[2]. In services in the field of issuing recommendation letters for medical personnel and health facilities, it still uses data processing from document file compilations and spreadsheet data on its office computer. This is very vulnerable to data loss, duplication, and the length of the process of obtaining information from the service[3]. The data management process by only relying on applications in the form of spreadsheets documents for important data does not reflect a good governance process and ineffectiveness in data management[4].

The process of control and management of data on medical personnel and health facilities is crucial to be managed well. Many health workers and health facilities that violate the rules of practice licenses and medical licenses such as the expiration of medical practice licenses often create problems in the community[5]. Therefore, an information system application is needed that assists the district / city Health Office in issuing recommendations and control processes for licensing the practice of medical personnel and health facilities in the city. It aims to simplify the process of managing the issuance of recommendations for medical personnel and control of health facilities in its working area. This aims to simplify the process of managing the issuance of recommendations for medical personnel and control of health facilities in their working areas and make it easier to evaluate the status of activeness of SIP licenses from medical personnel and health facilities in the district / city.

The application of information systems for licensing medical personnel and health facilities in this study is made on a web platform. This aims to globalize user access and facilitate the service work process at the Health Office. Staff users at the health department as application managers can also access the application anywhere and anytime by using internet services. In addition, this application is also developed with a waterfall model to facilitate the development that is done in stages in the implementation of this application[6].

Several previous studies have surfaced about the service process in the world of web-based health, including research from Susila, et al on service applications at clinics that have streamlined services into web-based services[7]. Another study states that in the health sector, the government has spurred the agency to transform its services into digital-based ones[8]. Related services in the form of representative information systems for district / city level local governments are also raised in research from Surtari et al, where there is already a general architectural form of health applications in their research as a proposal for the central government[9]. Likewise, the application of health practice licensing and the innovation in capital investment and one-stop integrated service office of Semarang city[10]. Research on making web applications has also been developed with the waterfall model and proven effective in the process of developing information systems by Irawan Satriadi et al[11].

## 2. RESEARCH METHODOLOGY

### 2.1 Waterfall Development Model

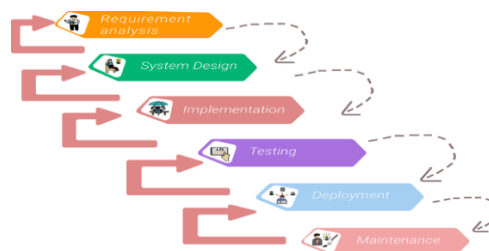
This research is a type of research with the Research and Development (R&D) research method. This research produces web-based application products to facilitate the Health Office in managing medical personnel resources and health facilities. The Research and Development (R&D) method is a method to produce products such as applications which are then tested for the effectiveness of the product results in their application[12].

The resulting application product is developed using the waterfall model. Waterfall is a development model that is commonly used in application development[13]. This model is proven to be effective in producing information-based applications because the stages are structured and step by step development must be passed to get good results[6].

### 2.2 Stages Waterfall

The waterfall development model is developed with six stages [14]:

- Requirement Analysis. Namely analyzing the system that runs in the field for preparation and compatibility with the desired application results. At this stage, researchers will communicate with the Bukittinggi City Health Office to obtain detailed data on the current process to be transformed into a web-based system analysis.
- System Design. Namely the second stage of the stages in waterfall where this stage designs the database and appearance of the application to be made[15]. Database design this system uses a MySQL database and the design formulation uses the UML model.
- Implementation. The third stage is the process of implementing the application by coding in the programming language [16]. Implementation of application coding in this study using the Laravel framework.
- Testing. The fourth stage is a process where testing of the application is carried out by limited people to get the suitability of the implementation results. [17]. Application testing is carried out by staff who usually serve the process of issuing recommendation letters for medical officers and health facilities.
- The fifth stage is Deployment, where the testing process that has passed the process is carried out to spread the application testing process to a wider scope, namely testing the application to all users who will use this application and then be used thoroughly[18].
- The final stage is the Maintenance process. This stage is an application maintenance process if there are bugs or errors in its implementation. [19]. The maintenance of this application is carried out for one year and is controlled regularly to ensure that the application runs as desired.



**Figure 1.** Model Waterfall

### 2.3 Data Collection Process

The data collection process in this study was carried out with:

- Observation, namely by direct observation at the Bukittinggi City Health Office. Researchers witnessed firsthand the management process of issuing recommendation letters for medical personnel and health





Class diagram in this application there are ten classes of candidate tables in making databases in the application of licensing information systems for medical personnel and health facilities. Namely the User Management class, Login, Health Workers, Health Facilities, Master Data, Facility group, college of origin, type of personnel, letter and master of letter.

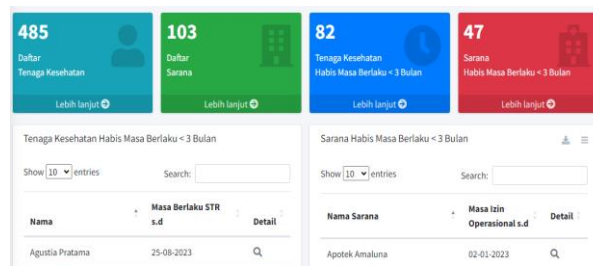
### 3.3 Implementation

The results of the analysis and design are displayed in the UML model along with a screenshot of the application results display below:



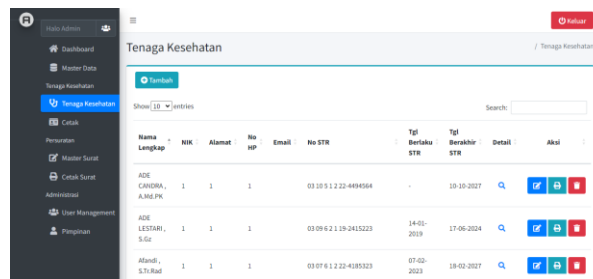
**Figure 6.** Main Page

- a. On the main page of the application, the main menu and display will appear with the concept of a dashboard system to make it easier for admins to view info graphics from the application. The following in the picture below is related to the detailed info graphic image that can be seen from the dashboard in the application.



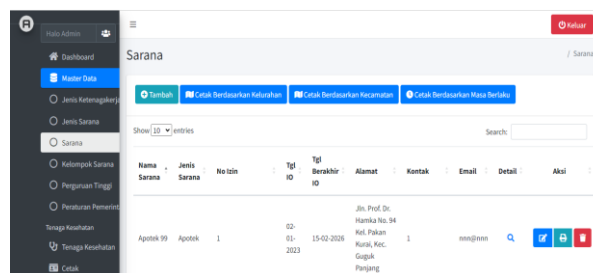
**Figure 7.** Dashboard System on the Application

- b. From the picture above the admin can find out the number of health workers, existing facilities, along with data on facilities and health workers whose licenses will expire. It is intended that the admin can manage this data to provide warnings to related parties to immediately extend their medical licenses.



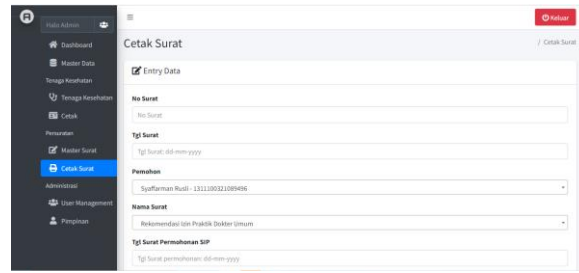
**Figure 8.** Health Worker Page

- c. The health worker page contains detailed data on existing health workers. On this page there are edit, print and delete data action buttons.



**Figure 9.** Facilities Page

- d. On the facilities page there is data on health facilities registered in the application. This facility page also provides edit, delete and print facility actions.



**Figures 10.** Letter Creation Input page

- e. This application also provides a menu for making recommendation letters for medical personnel and health facilities. Technical letter creation is preceded by the creation of letter master data containing standard correspondence data on the letter master page, and then filling in letter-specific data on the letter data input page. This can make it easier for admins to create letters based on existing data in the system.

### 3.4 Testing

The testing process of this information system is carried out by testing the application to two staff who will use this application. From the testing carried out, the results obtained are in accordance between the wishes or conditions of the letter management manual with the automation of this information system.

### 3.5 Deployment

After the testing process with limited staff, the information system was refined by conducting a trial use to all staff in the field of medical practice license services and health facilities along with related leaders. From the results of the simulation, this information system has met expectations and is ready to be used in services.

### 3.6 Maintenance

Evaluation of the application of this Information System in the process of licensing Medical Practices and Health Facilities this system continues to be monitored and reviewed if there are errors in its implementation, be it bugs or other errors for 1 year of implementation to get performance in accordance with expectations.

## 4. CONCLUSION

The conclusion of this research is that this application has succeeded in providing convenience for related governments in managing and evaluating data on medical personnel and health facilities based on info graphs and menus contained in the application. With the concept of a system dashboard in this application, an overview of the data in the system becomes visible, so that control related to data on medical personnel and health facilities that will expire will be quickly known and followed up by the agency. This application has also succeeded in the process of digitizing services for making permits for practice and health facilities in the district. So as to minimize errors and ineffectiveness of services. In addition, this application has also been implemented with a waterfall model in stages and has functioned well by the relevant parties. Testing of this application has been carried out to users and found suitable for use by related agencies.

## REFERENCES

- [1] A. H. Bulkani, "Implementasi Kebijakan Pembuatan Surat Tanda Registrasi ( STR ) Bagi Tenaga Kesehatan Provinsi Kalimantan Tengah," *J. Pencerah Publik*, vol. 6, no. April, pp. 26–34, 2019.
- [2] A. Fauzi and S. D. , Domi Sepri, "Rancang Bangun Sistem Manajemen Layanan Pemeriksaan Air Berbasis Web di UPTD Laboratorium Kesehatan Kota Bukittinggi," *G-Tech J. Teknol. Terap.*, vol. 7, no. 4, pp. 1488–1497, 2023.
- [3] I. Arifin and N. H. Niska Ramadani, "Analisis dan Perancangan Sistem Informasi Pendaftaran Pasien Rawat Jalan di Rumah Sakit Umum Daerah Lagita Analysis and Design of an Outpatient Registration Information System at the Lagita Regional General Hospital Studi Rekam Medis dan Informasi Kesehat," vol. 5, no. 2, pp. 118–121, 2022.
- [4] F. Perdana *et al.*, "Pemanfaatan Aplikasi Smartphone Google Spreadsheet dan Google Drive Sebagai Pengolahan Data dan Media Penyimpanan," vol. 3, no. 2, pp. 386–388, 2022.
- [5] M. Y. Dm, F. Khairul, S. Winarsi, N. Ningsih, and G. M. Saragih, "Analisis Hukum Pidana Dengan Sengaja Mempekerjakan Dokter Asing Yang Tidak Memiliki Izin Praktik Yang Dilakukan Oleh Klinik Kesehatan," vol. 4, pp. 7077–7090, 2022.
- [6] D. S. Purnia, A. Rifai, and S. Rahmatullah, "Penerapan Metode Waterfall dalam Perancangan Sistem Informasi Aplikasi Bantuan Sosial Berbasis Android," pp. 1–7, 2019.
- [7] M. S. T. Iswanto Sulila, Agus Lahinta, "Sistem Informasi Pelayanan Kesehatan Berbasis Web Pada Klinik Gocare," *Diffus. J. Syst. Inf. Technol.*, vol. 1, no. 1, pp. 83–93, 2020.



- [8] Domi Sepri and A. Fauzi, “Strategi Transformasi Digital dalam Pemeriksaan Kualitas Air Bersih pada Laboratorium Kesehatan,” vol. 4, no. 3, pp. 114–119, 2022.
- [9] S. Fajar, S. Gumilang, and W. Sutari, “Sebuah Usulan Generic Model Dashboard Aplikasi Kesehatan Pada Pemerintah Daerah Tingkat II di Indonesia,” pp. 8–9, 2018.
- [10] E. L. M. . Nurul Lutfiana, “Inovasi Sistem Informasi Tenaga Kesehatan (Sinakes) Online Pada Dinas Penanaman Modal Dan Pelayanan Terpadu Satu Pintu Kota Semarang,” *J. Public Policy Manag. Rev.*, vol. 8, no. 2, pp. 1–19, 2019.
- [11] M. D. Larasati and I. Satriadi, “Model Waterfall Untuk Pengembangan Sistem Informasi Pengolahan Nilai Pada SMP Kartika XI-3 Jakarta Timur,” vol. VI, no. 1, pp. 135–140, 2020.
- [12] R. N. P. Selly Fransisca, “Pemanfaatan Teknologi Rfid Untuk Pengelolaan Inventaris Sekolah Dengan Metode ( R & D ) ( Studi Kasus : SMK Global Pekanbaru ),” *J. Mhs. Apl. Teknol. Komput. dan Inf.*, vol. 1, no. 1, pp. 72–75, 2019.
- [13] D. Andriansyah, “Penerapan Model Waterfall Pada Sistem Informasi Layanan Jasa Laundry Berbasis Web,” vol. 4, no. 1, pp. 27–32, 2018.
- [14] T. Wahyudi and H. Faqih, “Pengembangan Sistem Informasi Presensi Menggunakan Metode Waterfall,” vol. 7, no. 2, pp. 120–129, 2021.
- [15] M. B. Kurniawati, “Penerapan Metode Waterfall Untuk Perancangan Sistem Informasi Inventory Pada Toko Keramik Bintang Terang,” *J. PROSISKO*, vol. 8, no. 2, 2021.
- [16] Y. R. Adi Nurseptaji , Arey , Fadila Andini, “Implementasi Metode Waterfall Pada Perancangan Sistem Informasi Perpustakaan,” *J. Dialekt. Inform.*, vol. 1, no. 2, pp. 49–57, 2021.
- [17] A. B. Paksi, N. Hafidhoh, and S. K. Bimonugroho, “Perbandingan Model Pengembangan Perangkat Lunak Untuk Proyek Tugas Akhir Program Vokasi,” vol. 14, no. 1, pp. 70–79, 2023.
- [18] E. Prasetyo, and A. Putra, “Implementasi Waterfall Model Dalam Pengembangan,” vol. 3, no. 1, pp. 213–224, 2021.
- [19] I. M. Ziaurrahman, “Rancang Bangun Sistem Informasi Wisudawan Menggunakan QR Code Berbasis Web,” *J. Jupiter*, vol. 14, no. 2, pp. 111–120, 2022.
- [20] J. O. Wisono, D. Pramono, and M. C. Saputra, “Analisis dan Perancangan Sistem Informasi Pemesanan Customized Jersey pada Injers Malang Berbasis Web,” *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 3, no. 4, pp. 3677–3686, 2019.
- [21] M. Ridwan, T. H. Sinaga, and M. Elsera, “Penerapan Framework Codeigniter Dalam Perancangan Aplikasi Manajemen luran Perumahan Griya Mandiri,” *Djtechno J. Inf. Technol. Res.*, vol. 3, no. 1, 2022.
- [22] R. R. Prasena, H. Sama, and U. I. Batam, “Studi Komparasi Pengembangan Website Dengan Framework Codeigniter Dan Laravel,” vol. 1, pp. 613–621, 2020.
- [23] N. Lestari and R. F. Gunawan, “Implementasi Data Mining Untuk Menentukan Pola Penjualan Dengan Market Basket Analysis,” *Insearch Inf. Syst. Res. J.*, vol. 1, no. 02, pp. 30–38, 2021.
- [24] S. S. Julianto Simatupang, “Perancangan Sistem Informasi Pemesanan Tiket Bus Pada Po. Handoyo Berbasis Online,” *J. Intra-Tech*, vol. 3, no. 2, 2019.
- [25] E. B. Pratama, U. Saparingga, S. Informasi, F. Teknik, U. Bina, and S. Informatika, “Pemodelan UML Sistem Informasi Administrasi Kependudukan Untuk Kantor Desa,” vol. 15, no. 2, pp. 107–118, 2021.
- [26] T. B. Kurniawan, “Perancangan Sistem Aplikasi Pemesanan Makanan Dan Minuman Pada Cafeteria No Caffè Di Tanjung Balai Karimun Menggunakan Bahasa Pemograman Php Dan Mysql,” *J. TIKAR*, vol. 1, no. 2, pp. 192–206, 2020.