

Hospital Information Platform Based on Internet and Intelligent Treatment

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Abstract. This paper analyzes the current situation of hospital informatization, and puts forward a new solution to realize the integration of hospital information system to make up the defects of the traditional integration scheme in the current hospital informatization construction. Furthermore, it introduces the software architecture and development planning, as well as expounds the operation process of Internet hospital, including website diagnosis and treatment and Medical Union service system. Each independent medical information subsystem is closely linked through the hospital information integration platform. On the base of the open architecture, the integration platform has strong scalability and supports the connection of customized adapters and the application of complex heterogeneous systems, so as to realize the data sharing and information collaboration among various hospital systems.

Keywords. Intelligent medical treatment, hospital informatization platform, smart hospital, hospital information system

1. Introduction

With the development of Internet technology, the Internet is applied in various stages of the hospital such as medical treatment, patient treatment and so on, with the purpose of promoting intelligent medical services and laying the foundation for the construction of hospital information platform, of which smart medicine is the expanded application of modern technology in the medical industry. In this background, it is necessary for hospitals to build an advanced information platform to support the demand for intelligent medical services. Therefore, building a basic information system to realize online diagnosis and treatment, offline distribution and other services based on the existing infrastructure, give full play to the innovative advantages of Internet technology, and bring efficient Internet medical experience to patients would produce significant values to the public.

2. Conception of Intelligent Medical Hospital Informatization Based on Internet

The aging of population and the enhancement of health management consciousness are driven by Internet plus medical health demand. Implementing the information benefiting the people project, promote the comprehensive reform of public hospitals, and challenge the original system; Technology driven is the core of development, sensor technology makes terminals more intelligent, and brings Internet plus medical health. Technical realization means to meet the needs. The Internet

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plus boom brings new ideas. Internet plus medical health is a closed loop health management centered on human beings. The establishment of health management for residents should establish regional population health information platform, and expand the application of various medical services from the electronic health records and the whole population at the bottom of the data. Intelligent medical treatment is based on the rapid development of life science. The scope of intelligent medical services includes chronic disease management, information and data transmission and storage. Home management of patients with chronic diseases after discharge is the focus of smart medical services. Two-way video monitoring with patients at home through smart phone app, safety science education and rehabilitation guidance are carried out.

3. Overall Framework

With the wide application of Internet in life, Internet plus is the integration of information technology and traditional industries. Smart medical service is to use medical technology to innovate service mode, give play to the advantages of resource integration and provide real-time health and medical services [1]. Smart medical framework includes software, hardware and business framework. With the help of cloud computing service mode, the intelligent medical information platform integrates medical resources in the cloud [2]. Patients can enjoy various medical services through the platform, and institutions can provide accurate editing medical services for patients through the platform.

The intelligent medical software framework is an information platform system, which breaks through the barriers of the hospital decentralized system, sends the diagnosis and treatment information to the patient's mobile terminal, and meets the needs of patient reservation information [3]. The software framework is to realize data sharing and big data analysis with the help of the Internet. The business framework is constructed through the hospital information platform, and the platform software framework includes distribution service, authority management, etc. The upper application is divided into app based on mobile terminal and third-party public service platform. Authority management realizes unified management of authority. Distribution services distribute business requests to different application servers. The software framework can be seen in Figure 1 as follow.

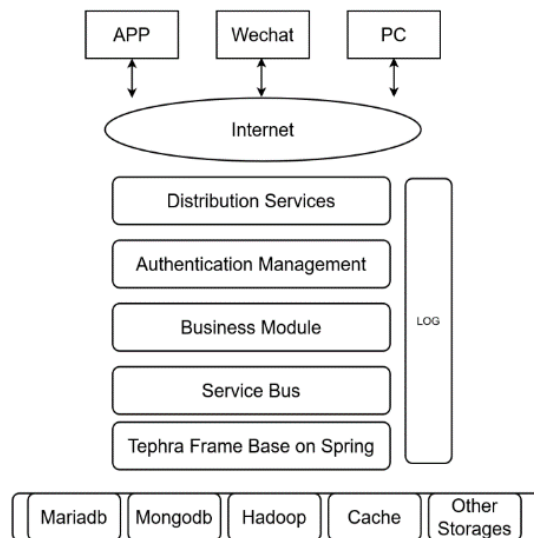


Figure 1. Software framework.

Internet smart medicine needs hardware equipment to ensure internal network connection [4]. Wireless terminal coverage needs to prevent data leakage. The hospital provides patients with medical IC card, and the diagnosis and treatment information can appear by swiping ID card. The hospital adopts the integrated service management mode to carry out the construction of information platform [5]. It is necessary to ensure the smooth progress of hierarchical diagnosis and treatment, improve the utilization of relevant business framework, timely store the relevant data information of the hospital to the platform, and realize the scientific application of relevant data [6]. With the help of close combination of supporting methods, hospitals can enhance the sharing effect of relevant medical information resources [7]. When establishing the information management platform for the family members of large hospitals, we can directly understand the actual needs of patients and establish the information management platform for the family members of large hospitals.

Internet smart medical system is integrated into the medical service system, which enables the official account to achieve online payment and other acts [8]. Files are established for the first visit, and doctors can obtain the information of the last visit on the platform, including treatment plan, etc. The construction of information platform will connect doctors and patients and encourage doctors to strive to improve their medical business level. With the help of information platform, the hospital can connect with other hospitals and provide diversified medical services, which is beneficial to patients who need referral. Patients can meet their medical needs with the help of platform distribution, and the information platform provides personalized services for patients.

4. Operation Process

Smart medicine is to apply information technology to the medical industry. The hospital information platform breaks the barriers of medical institutions, redefines the medical service mode and creates a new medical service experience. The Internet smart hospital can realize the linkage diagnosis and treatment of patients, and the Internet hospital auxiliary diagnosis system completes the first diagnosis at the grass-roots level to avoid the rush of patients seeking medical treatment [9-11]. The core business of Internet hospital is online outpatient service. Patients can make online appointment, registration and advance payment from the platform.

The medical and health service platform is linked with value-added medical service providers to realize large-scale health services and promote the formation of medical and health service ecosystem. Patients can make accurate online appointments on the Internet platform. Patients can book offline clinics through the Internet, call the hospital information system through the Internet platform to issue a checklist, and decide whether to make an appointment for the next interview doctor according to the examination results. The doctor will diagnose according to the examination results of the platform [12, 13]. After seeing a doctor, the patient can automatically set a regular follow-up reminder after diagnosis. Residents' health records service is to provide users with the service of viewing medical records at any time, including electronic medical records and residents' health records. Residents' health records service interface carries out routine operation on electronic medical records, and doctors establish electronic medical records.

Platform user information management includes the management of various roles. Various services of the platform need to call various information, set different call permissions for different users, and the interface for deleting information is limited to administrator calls. The remote reservation and registration service integrates remote medical resources into the platform. After patients log in to the platform, they can view the current situation. For the doctors on duty who meet the needs before, select the doctors of the corresponding departments according to the time, and click to confirm that the appointment is successful [14, 15]. After confirming the time and other information, submit the appointment application. The patient can obtain the organization information through the appointment service interface. Updateaccount() can cancel the current appointment and adjust the design for the patient's emergency. Telemedicine service is designed for users in areas with underdeveloped medical level. The patient login platform can retrieve online

doctors according to symptoms. Online diagnosis is carried out by text chat. Selecting doctors needs to confirm the online diagnosis and treatment time with doctors.

5. Functional Design

Internet smart medicine realizes the combination of online and offline treatment service mode. Patients can realize long-term registration inspection and other services, and no common diseases can share the consultation of doctors in other hospitals online. The construction of hospital information platform can meet the personalized needs of patients and make the treatment environment more harmonious. The design goal of medical information platform is to gather scattered medical resources, use large-scale storage devices to store basic medical resources, use high-speed network technology to make high-speed data transmission, achieve independent deployment of medical information platform services, and adopt micro service architecture. Figure 2 is the model of medical informatization system.

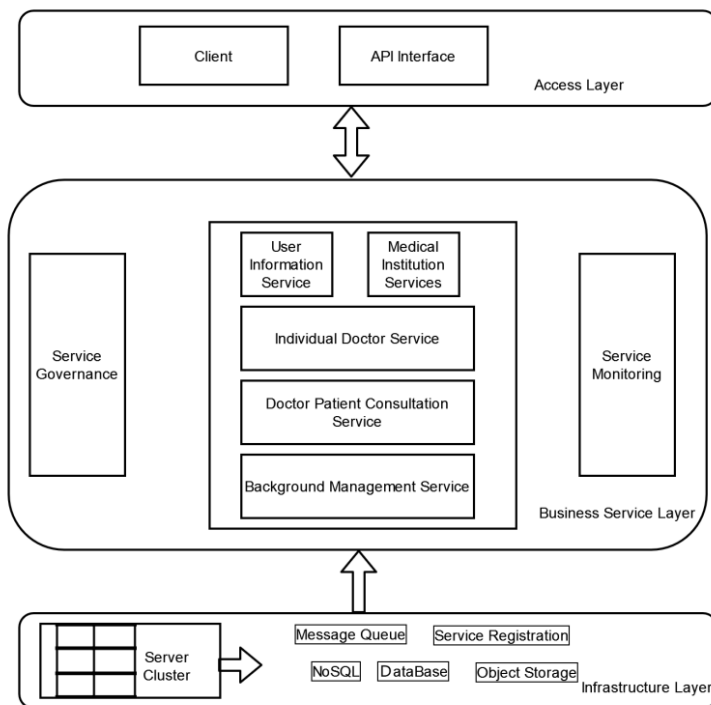


Figure 2. Architecture model of medical information platform.

Online diagnosis and treatment adopt the combination of online and offline diagnosis and treatment to build a win-win medical and health service platform for doctors and patients. The patient downloads the official app of the registered hospital and logs in, and the patient receives the prescription issued by the doctor. Patients can pay online for treatment and evaluate after completing Internet hospital diagnosis and treatment services. Patients make an appointment with experts through the Internet platform, and patients with chronic diseases do not need to go to large hospitals. Internet hospitals realize the interconnection between doctors and patients. Patients can obtain medical advice from the system through the smart guide function of mobile phones. After doctors issue medical orders, they can complete the payment and ask questions on the Internet

platform. Internet hospitals focus on improving patients' medical experience, so that patients can experience the whole process of service. Doctor diagnosis and treatment auxiliary tool is a mobile medical platform connecting doctors and patients. Its functions include appointment management, doctor community, etc. Cloud services are combined with hospital mobile app and other systems to move patient services to the cloud. The functional structure diagram of smart medical cloud platform is shown in Figure 3.

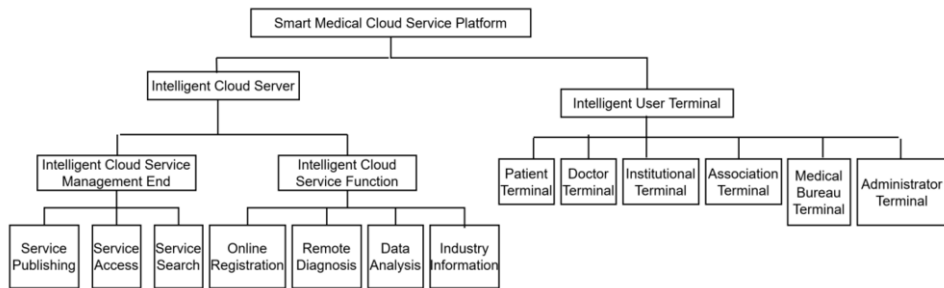


Figure 3. Functional structure of intelligent medical cloud platform.

The development of Internet technology has popularized the informatization of the medical industry. National medical research institutions have established informatization systems, and an efficient and convenient informatization platform has been formed at present. The services of the medical consortium include telemedicine and network collaborative outpatient service. At present, it is mainly aimed at the members of the cooperative medical consortium established with the hospital. The system covers a variety of business functions. The location of telemedicine is the terminal of the doctor's consulting room. Internet hospitals provide online collaborative outpatient services, and online experts can access the patient's previous medical records. Through the network collaborative outpatient system, provide the best treatment scheme for patients.

6. Conclusion

Aiming at the defects of the traditional integration scheme, this paper proposes to build a unified application integration platform to realize the integration of information systems within and between hospitals. Through the hospital information platform and referring to the IOT technical framework and architecture, loose coupling integration is carried out to achieve the integration of heterogeneous system data within the hospital. The original can only depend on the specific information system respectively in patients with related data, such as attendance record, the doctor's advice, fee itemizations, inspection report, the hospital medical record, etc., effectively unified to the corresponding patient records, the original is given priority to with each department or system of patient information organization into a real way of taking patients as the center of the organization, all the data are real-time classification to patients with specific name. This is a substantial breakthrough in the field of domestic informatization and a concrete embodiment of patient-centered management concept in hospital operation practice. Therefore, building such an integrated platform is the guarantee of the sustainable development of hospital information system.

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