Village Official Assistant System

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Abstract: Since the 19th CPC national congress, "rural revitalization" has become a hot word in China, and taking the road of rural revitalization has become a new journey of economic construction for the Chinese people. In recent years, more and more college student village officials have come to work in rural areas. Due to the low level of information management, imperfect management mechanism and non-standard management mode, the information construction standard of college student village officials cannot be unified, and their management level is uneven or even independent. All of these makes the repeated accumulation of information resources, the waste management cost, at the same time also appeared in the information resource management at different levels of the department of management software is inconsistent, the problem such as data using the standard is not unified, gradually makes various departments "information island", which affect the consistency and sharing information.
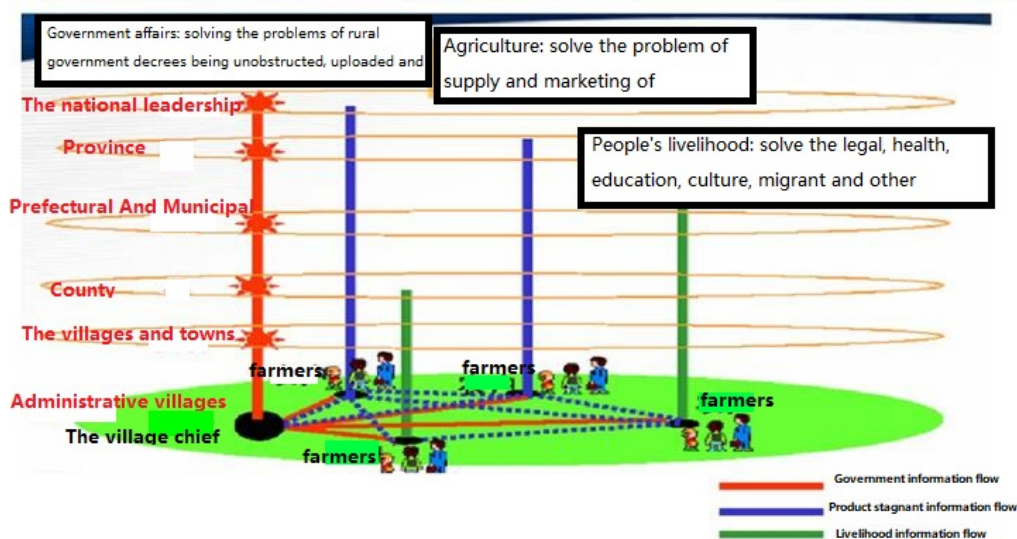
1. Introduction

Fig. 1 Information structure and flow

The system has built a portal website for every village and community in the country. Villagers, village cadres, university students, village officials, and entrepreneurs who return to their hometowns can register their membership for free to claim the village station. After the examination and approval, they become the webmaster of the village website, that is, the network village official. Master shall have the right to through the village, village news, notice, have the right to upload pictures, our promote themselves up and things, promote his hometown of agricultural products, etc., to be the first time to see the changes in the village, at the same time, let the brand construction become simple, allows businesses to link to the Internet, through the website promotion at the same time also can

bring a steady stream of orders. They are the most basic information communication platform of the village official communication ecosystem and the basic information release window of the countryside. At the same time, the person in charge of agricultural cooperatives and rural entrepreneurs who work on projects in rural areas can assist their own projects and have authoritative platforms and positions to speak through the village official communication website. The system can be designed as a wealth of traffic function (can be based on the site visits to get commission function), webmaster can be based on the site visits to get the corresponding income. The structure and flow of the system information are shown in the figure

2. System description

Village official system civilian design, use simple. Generally speaking, those who can use QQ, WeChat and weibo can quickly get started with the village official communication. Returning entrepreneurs can take advantage of the first village officials through building a village station for yourself as an online speech platform, at the same time opened his own shop, no matter what agricultural products can show on sales, if your product can bulk wholesale, can go to the village officials opened their own wholesale shops, and then upload the products to display. You can also release all kinds of business information through the rural classified information platform at any time, so that your business information can be easily released on multiple platforms at the same time. The architecture of the village official communication information system is shown in the figure[2].
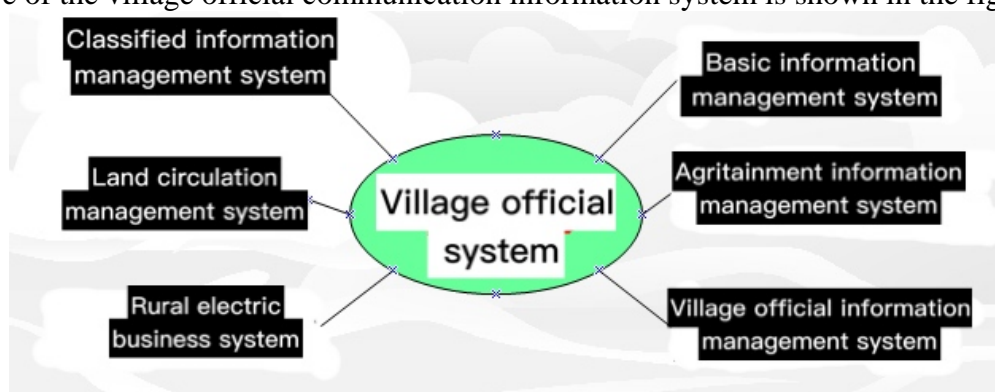

Fig. 2 Village official communication information system architecture

2.1 Basic information management

Basic information management including introduction, hot notification, agriculture, rural areas and farmers in the village, village people in the party construction of village, poverty alleviation, investment promotion, agricultural enterprises, agricultural technology, hometown specialty, hometown pictures and so on information management, can let the outside world to the first time to see the changes in the village, at the same time also can timely notice and latest news, let the villagers can communicate with each other and communicate, understand and aware of the latest policy information in time, keep up with the pace of The Times, they are village officials on the ecological system is the most basic information dissemination and exchange platform. A villager can apply to be a stationmaster. The stationmaster can manage the information of the village, including the information released by the villagers.

2.2 Page Numbers

Classified information management includes information release and management of villagers' speeches, enrichment projects, agricultural products sales, labor recruitment, unsalable assistance, rural supply and demand, etc.

2.3 Land transfer management

Land transfer management includes the management of the demand and supply information of cultivated land, mountain land, forest land, garden land, homestead, construction land, farmyard, farm, farm, four wasteland, factory building, reservoir pond, grassland, etc. And the release of some of the latest land policy and land news and other information.

2.4 Rural e-commerce management

Rural e-commerce is a B2C platform for rural people to conveniently open online stores to sell agriculturally related products. Rural e-commerce strives to become a display platform for rural high-quality agricultural products sales.

2.5 Agritainment information management

Agritainment information management is a national rural tourism integrated service platform. All the information of farmhouse, rural scenic spot, picking garden, resort, characteristic farmhouse hotel, individual rural tour guide, outdoor goods store, rural auto repair shop and so on will be reflected in the platform, timely update and reflect the latest information of farmhouse scenic spot and other projects, to provide convenient and quick service for customers to visit.

2.6 Village official information management

The village official information management includes the basic information management, the daily management, the examination appraisal management, the work exchange management, the information inquiry management, the information announcement and so on.

(1) Basic information management: complete the collection and management of the current status, recruitment, employment, education, contact information and other diseases of college student village officials.

(2) Daily management: completed the management of the salary implementation, work implementation, public welfare position claim, participation in education and training, work log and other situations of college students' village officials.

(3) Assessment and evaluation management: complete the daily assessment, assessment, annual assessment and democratic assessment of college student village officials.

(4) Work exchange management: to complete the management of the experience and practice, work summary, experience and experience of college students in this county as well as the characteristic practice and advanced experience exchange platform of this work in other provinces and cities.

(5) Information query management: completed the basic information of college students' village officials, training situation, pairing and helping, entrepreneurial projects, work resumes, dimission situation, usual assessment, annual assessment, rewards and punishments, and relevant policies, recruitment, getting rich and starting businesses, civil servant recruitment and other information query.

(6) Information bulletin: complete the release of all kinds of real-time information.

3. Technical proposal

3.1 System performance requirements

From the system load capacity, security, system reliability, maintainability and other aspects of the analysis, put forward the following requirements:

3.1.1 Load capacity

System load can be considered from two aspects of developing user visits and data capacity

1) Provide the solution of application load: aiming at the performance problem, adopt the three-layer architecture design, calculate the load mainly in the middle layer, reduce the calculation

impact on the client side. Page caching technology can greatly reduce double-counting and provide business response times. Adopting data caching technology (including in-memory database, secondary cache and other mechanisms) can greatly reduce the direct access to the database, provide data access efficiency, and solve the bottleneck problem of database access performance.

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3.1.2 Security line

1) Network security: the information system provides business services in the form of WEB sites. The openness of WEB sites will introduce security problems to some extent, such as network attacks and system vulnerabilities. Through the selection of system platform (Windows /Linux), system protection means (firewall, vulnerability patches, anti-virus software) to strengthen the system network security.

2) Data security: the design needs to prevent information leakage and loss: can provide access control of data, data backup (regular, scheduled)/ recovery; If necessary, redundant deployment can be adopted to meet data security and data disaster preparedness requirements.

3) User authority management: conduct authority management for system optimization to prevent unauthorized operation; Control all user function permissions in the system according to user roles.

4) Business logic security design requirements: error-proof processing logic; Consider the requirements of laws, regulations and business rules on user rights.

5) External system interface security requirements: when the system needs to be connected to the outsourcing system, it shall have the corresponding access authentication process. Unauthorized third-party systems shall not access the middle layer business. All external access systems shall only access the system through the middle layer and shall not directly access the database. Permission control over authorized external access systems needs to be considered.

3.1.3 Reliability and availability requirements

System reliability is manifested in two aspects: hardware system reliability and software system reliability.

1) Software system reliability includes: operating system, database system, middleware software; In addition, the business implementation layer of the system should meet the requirements of mature architecture design system and layered software architecture design. The interface design of each key component should fully reflect the testing requirements of the component and be able to evaluate the reliability of the system by designing test cases.

2) The usability of the system is embodied in the user-oriented serviceable type. Through the optimization/redundancy deployment of hardware platform and software system, the load sharing mechanism can be adopted to improve the usability of the system.

3.1.4 Maintainability

According to the definition of software maintainability in ISO/IEC9126 software engineering - product quality; Software maintainability refers to the ability of software products to be modified. (the type of modification may include correcting, improving, or adapting software to changes in the environment, requirements, and functional specifications.) Software maintainability refers to the ease of software maintenance. Software maintainability is the ease with which a feature can be maintained according to predetermined needs. Software maintainability refers to the ability of a software to remain in a specified state or to recover to a specified state within a given time interval under specified conditions of use.

3.2 System design principles

3.2.1 Open

Based on the idea of component-based design, the design idea of delamination and sub-module is fully considered in the system design to ensure that the system has a certain degree of delamination and openness. Through the design of layering and sub-module, each module in the system has a clear indirect interface, a clear division of functional areas, and various components work together through the interface. In addition, the significance of adopting hierarchical/sub-module design also lies in its positive significance for the subsequent maintenance development/expansion and expansion development of the system.

3.2.2 Availability

System reliability refers to the ability of the system hardware/software to resist the interference of abnormal conditions and ensure the normal operation of the system. The measures of system reliability are mean time between failures and mean maintenance time. The former refers to the time of two faults before and after the evaluation, which reflects the safe running time of the system. The latter refers to the average recovery time (i.e., the recovery time) after failure, reflecting the maintainability of the system.

Ways to improve reliability/availability: reliability of hardware, redundancy design of hardware structure; System failure detection/handling and system safety protection; Software system fault isolation design; Network management system detection and warning; Improve routine inspection and maintenance.

3.2.3 Maintainability

With perfect management mechanism, maintainability and manageability are important indexes to measure system quality

3.2.4 Usability

As the system is designed for organizational departments, college student village officials and various commercial households, it is necessary to repeatedly absorb corresponding personnel to participate in the process of demand analysis and design. Consider users' application habits, mine and refine requirements specifications, pay attention to detailed requirements of business process, interface/structure design, and provide system application performance requirements indicators.

3.2.5 Security

In an information system, the core element is data. The system adopts B/S architecture and standard protocol to carry the business. The requirements of data security should be fully considered in the system architecture design, including user information storage/transmission security, user authentication information storage/transmission, data transmission security management; In addition, as an information system, the security/robustness unification of the device/software system of the core server should be based on considerations.

3.2.6 Scalability

With the gradual improvement of the system's business functions and the gradual refinement and enrichment of the management system and norms for college students' village officials, the system's functions and capacities are bound to develop and change accordingly. Therefore, from the perspective of design and development, the extensibility design requirements of the system should be fully considered to facilitate the subsequent secondary development and maintenance and meet the requirements of sustainable development of the system. In addition, the system architecture should consider the requirement of maintainability and be able to design convenient maintenance management interface.

3.2.7 The overall planning

Based on SOA, J2EE technical standards and specifications, the system can provide complete security authentication, authorization, logging, etc. Users can use the browser or mobile WeChat access to the system, query and browse the required information. A low coupling hierarchical structure is designed to meet the requirements of the system. It is conducive to the division of labor and cooperation among team members and supports different hardware and operating system platforms. It has wide application range, high security configuration, good portability, strong cross-platform application integration ability, scalability and openness.

4. Conclusions

The whole system has completed all functions after our preliminary design and test, and has the following test conclusions:

(1) The test is monitored in the real use environment of customers. The system under test is simulated with five simple business scenarios, three complex scenarios and four ultra-strong concurrent test scenarios. The response rate, resource consumption and system bottleneck are mainly monitored. During the test, there are more than 100w pieces of data support, which fully conforms to the support environment used by the customer in the later period.

(2) Real-time monitoring process data is increasing gradually and the data volume is huge. At present, there is no limitation of disk space to curb the improvement of software performance. Performance will be excellent enough to meet any day-to-day production performance requirements

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