

# Design and Implementation of Smart New Rural Information Government Management System

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**Abstract:** At present, there are still problems in some rural areas such as imperfect personnel management system, inconsistent mode, and redundant data management, in order to improve the management mechanism at all levels and improve the efficiency and accuracy of villagers' information collection and statistics, a design and implementation method of smart new rural information government management system is proposed. Based on MVC architecture and ThinkPHP 6.0 development framework, the system assigns authority to personnel, realizes hierarchical management, and improves and unifies the personnel management mode. At the same time, all kinds of data are collected, and the collected data can be connected and counted, and the database can be constructed, which solves the problem of data management redundancy and improves office efficiency.

**Keywords:** Smart Countryside; People Management; Information Collection

## 1. Introduction

In recent years, China has won a comprehensive victory in the battle against poverty, but poverty alleviation alone is not enough, in order to achieve the goal of building a strong socialist country in an all-round way as soon as possible, rural revitalization is indispensable. Since the 18th National Congress of the Communist Party of China, the informatization and digital development of rural areas has received great attention from the Party Central Committee, and a series of policy documents have been issued to guide the construction of rural informatization and promote high-quality rural development with informatization. Rural governance has achieved certain results, but the management system of some rural areas is not perfect, the collection method of villagers' information is complex and the data is easy to produce

redundancy, which brings a lot of inconvenience to rural management.

In view of the above problems, the smart new rural information government affairs management system will carry out hierarchical management of rural personnel and analyze and comprehensively manage the collected data, realize the interconnection of superiors and subordinates, ensure the mutual coordination of rural affairs and the sharing of information resources, improve the efficiency of rural management, standardize the standardization of rural management, increase the transparency of rural management, and improve the decision-making level of rural management, make the office of village committees more standardized and precise, and greatly improve office efficiency. It saves manpower and office time and provides a guarantee for the revitalization of the countryside.

## 2. Research Status

Through the query and learning of similar research results, the research ideas are clearer. This section presents the current state of research and analyzes the current state of research.

### 2.1 Research Status

Making good use of the smart new rural information government management system is the basis for realizing rural revitalization, national informatization and social modernization, accurate data statistics and summary, so that the villagers' information is more specific, so that the superiors can control the information more simply, and at the same time can be used to make reasonable planning and construction of the countryside. The following is an analysis of the current state of research on this system from the perspective of academia.

In the Wanfang Data Knowledge Service Platform, a total of 12 papers were retrieved

through the search topic (rural) + all (village affairs management system), and the time (2014-2022).

In the Weipu data platform, a total of 4 papers were retrieved by searching for title or keyword (rural) + any field (village affairs information management) in time (2014-2022).

On CNKI's CNKI service platform, 22 articles were retrieved through searching subject (rural) + full text (village affairs management system) and time (2014-2022), and the results are shown in Figure 3.

Through in-depth rural research, Du Qinsheng[1] developed and completed the new rural information management system, including village committee management, villager management, village affairs management and party affairs management. System users can add, delete, modify and query villagers' information, village affairs and party affairs according to their own needs, and manage the database. Chen Huijia[2] uses Java technology, SqlServer database and JDBC database connection technology to realize the comprehensive management of rural information, and develops the rural comprehensive information service system. Zhang Jun[3] based on the SSM (SpringMVC, Spring, Mybatis) framework, using a service-oriented (SOA) system structure, using JavaEE platform and SQL Server database to develop a grid-based smart village management system. Ye Chunhong[4] adopts the MVC design pattern architecture based on the SSH framework. The database is a SQL Sever2014 database. The presentation layer, business logic layer, data persistence layer, and domain module layer form the technical framework of the system. Pan Ning[5] effectively integrates the existing information resources, designs a set of information management system suitable for the current administrative management of rural grassroots organizations and social services, and adopts the C/S mode as the system architecture and the enterprise-level Visual Studio 2008 as the system development platform. .NET technology is used as a development framework to develop a dynamic interactive application system.

## 2.2 Analysis of the Current Status of the Study

At present, a very small number of rural areas already have independent information government management platforms, but the

integration of online and offline government services is not enough, the accuracy, completeness and timeliness of data are not high, data sharing and business collaboration still need to be deepened, and the demand and service accuracy of the platform still need to be further improved.

In view of the problems existing in the above methods, this system will make full use of big data analysis and mining technology to explore new modes of information collection, and enhance the accuracy of villagers' information and the refinement of statistical analysis.

## 3. Functional Analysis

This section briefly analyzes and describes the functions of each module applied by the system.

### 3.1 Login

Connect to the background database, verify the identity of the login, and assign different system usage rights according to different identities, and use different functions, as shown in Figure 1.



Figure 1. Login

### 3.2 Homepage

The homepage shows statistics on village committee members, the number of villagers, the total area occupied by farmland and the number of party members, as well as the changes in data on various types of personnel in the past seven years, as shown in Figure 2.

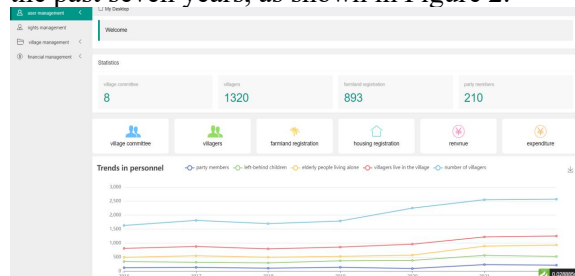


Figure 2. Homepage

### 3.3 User Management

Realize the basic management of all users, including administrators (village party branch secretaries and village committee directors), village committee cadres and villagers. It is mainly for the addition, modification and

deletion of various user information by subordinate cadres by higher-level cadres.

### 3.3.1 User Data Statistics

Real-time statistics on the number of people living in the village and the number of people of all ages are carried out and a pie chart is formed, which is convenient for managers to intuitively feel the proportion of various types of people in the village, as shown in Figure 3.



Figure 3. User Data Statistics

### 3.3.2 List of People

Displays a list of all villager information, each row can view the details of that villager, and you can enter the name of the villager you want to view, as shown in Figure 4.

| ID | Name    | Gender | ID Card  | Residence | Education  | Occupation   | Post           |
|----|---------|--------|----------|-----------|------------|--------------|----------------|
| 1  | Wilson  | Male   | 20200001 | chinese   | 1884575981 | league me... | batcher's i... |
| 2  | Wilson  | Male   | 20200002 | chinese   | 1885818131 | league me... | batcher's i... |
| 3  | Nancy   | Female | 20200003 | chinese   | 1884575993 | league me... | batcher's i... |
| 4  | Jessica | Female | 20200004 | chinese   | 1884575999 | league me... | batcher's i... |
| 5  | Alan    | Male   | 20200005 | chinese   | 1884575999 | league me... | batcher's i... |
| 6  | Emily   | Female | 20200006 | chinese   | 1878456785 | party        | villager       |
| 7  | Eric    | Male   | 20200007 | chinese   | 1878456785 | middle       | high school    |
| 8  | Danny   | Male   | 20200008 | chinese   | 1878456785 | middle       | high school    |
| 9  | Walter  | Male   | 20200009 | chinese   | 1878456785 | middle       | high school    |
| 10 | Emma    | Female | 20200010 | chinese   | 1878456785 | party        | batcher's i... |

Figure 4. List of People

### 3.3.3 Administrators, village committees, villagers

The super administrator adds, deletes, and modifies the information of administrators, village committee members, and villagers, as shown in Figures 5, 6, and 7.

| ID | Name   | Username | Gender  | Mobile phone no. | The political l... | Highest educ... | Department      | operate     |
|----|--------|----------|---------|------------------|--------------------|-----------------|-----------------|-------------|
| 1  | Wilson | 20200001 | chinese | 1884575981       | league member      | batcher's de... | Information...  | Super admin |
| 2  | Wilson | 20200002 | chinese | 1885818131       | league member      | batcher's de... | Village Part... | clerk       |
| 3  | Nancy  | 20200003 | chinese | 1884575993       | league member      | batcher's de... | Village comm... | director    |

Figure 5. Administrators

| ID | Name    | Username | Gender  | Mobile phone no. | The political l... | Highest educ... | Department     | operate |
|----|---------|----------|---------|------------------|--------------------|-----------------|----------------|---------|
| 1  | Jessica | 20200004 | chinese | 1884575999       | league member      | batcher's de... | Women's Fed... |         |
| 2  | Emma    | 20200010 | chinese | 1878456785       | party              | batcher's de... | Governance     |         |

Figure 6. Village Committees

| ID | Name   | Mobile phone number | The political landscape | Highest educ... | Department | Post     | operate |
|----|--------|---------------------|-------------------------|-----------------|------------|----------|---------|
| 1  | Alan   | 1884575991          | league member           | batcher's de... |            | villager |         |
| 2  | Emily  | 1878456785          | party                   | batcher's de... |            | villager |         |
| 3  | Eric   | 1878456785          | middle                  | high school     |            | villager |         |
| 4  | Danny  | 1878456785          | middle                  | high school     |            | villager |         |
| 5  | Walter | 1878456785          | middle                  | high school     |            | villager |         |

Figure 7. Villagers

## 3.5 Village Management

Village affairs are made public, rural management is open and transparent, the management system of rural affairs is more standardized, and the villagers' right to know, participate and supervise is guaranteed, including the registration and management of farmland and houses.

| ID | Username | Name   | Password | Department           | Post        | Status | operate |
|----|----------|--------|----------|----------------------|-------------|--------|---------|
| 1  | 20200001 | Wilson | 123456   | Information Man...   | Super admin | 4      |         |
| 2  | 20200002 | Wilson | 123456   | Village Party (In... | clerk       | 3      |         |
| 3  | 20200003 | Nancy  | 123456   | Village committee    | director    | 3      |         |

Figure 8. Rights Management

### 3.5.1 Farmland Registration

Farmland belongs to collective land, owned by the collective, the ownership of the land cannot be transferred or leased for non-agricultural construction, the module is open to all members, there is no authority can not be modified, as shown in Figure 9, for the area where all villagers have the right to use the land.

| ID | Name   | Quantity | Number | The first plot | The second p... | The third p... | The fourth p... | The fifth p... | Total area |
|----|--------|----------|--------|----------------|-----------------|----------------|-----------------|----------------|------------|
| 1  | Wilson | 3        | 3      | 13.4           | 20              | 23.3           | 0               | 0              | 66.7       |
| 2  | Wilson | 4        | 3      | 22.6           | 23.7            | 45.8           | 17.4            | 0              | 109.5      |
| 3  | Nancy  | 5        | 1      | 16.7           | 33.5            | 35.8           | 25.9            | 23.7           | 136.6      |

Figure 9. Farmland Registration

### 3.5.2 Housing Registration

Homesteads in rural areas cannot be bought and sold, this module is open to all members, there is no permission and cannot be modified, only the total number of households and the number and area of houses owned, as shown in Figure 10.

| ID | Name    | Number of households | Number of ho... | First house a... | Second hous... | Third house a... | Total house a... |
|----|---------|----------------------|-----------------|------------------|----------------|------------------|------------------|
| 1  | Wilson  | 3                    | 1               | 103.8            | 0              | 0                | 103.8            |
| 2  | Wilson  | 3                    | 2               | 104.5            | 115.3          | 0                | 219.8            |
| 3  | Nancy   | 1                    | 1               | 115.4            | 152.9          | 154.5            | 422.8            |
| 4  | Jessica | 1                    | 1               | 99.7             | 0              | 0                | 99.7             |
| 5  | Alan    | 1                    | 1               | 120.4            | 0              | 0                | 120.4            |
| 6  | Emily   | 1                    | 1               | 205.6            | 0              | 0                | 205.6            |
| 7  | Eric    | 1                    | 2               | 105.8            | 130.4          | 0                | 236.2            |
| 8  | Danny   | 1                    | 3               | 91.0             | 120.0          | 220.0            | 431.0            |
| 9  | Walter  | 2                    | 1               | 81.4             | 0              | 0                | 81.4             |
| 10 | Emma    | 2                    | 2               | 112.7            | 154.3          | 0                | 267.0            |

Figure 10. Housing Registration

## 3.6 Financial Management

Establish a sound financial management system, truthfully reflect the financial situation of rural areas, record every income and expenditure in detail, ensure openness and transparency of revenue and expenditure, and protect members' right to know and supervise financial activities.

### 3.6.1 Revenue

After receiving income, the higher-level cadres make a detailed record of each income

(including higher-level appropriations and social donations, etc.), and generate a line chart of each income each year, as shown in Figure 11, which can intuitively understand the economic situation of the village during the seven years.

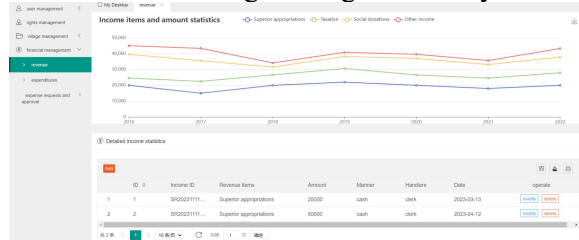


Figure 11. Revenue

### 3.6.2 Expenditures

The detailed rules of the expenditure of various projects in the village are registered, and a statement and statistical chart of the expenditure items and amounts are generated to reflect the expenditure of the village, as shown in Figure 12.

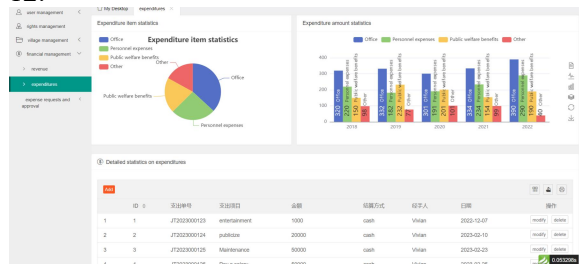


Figure 12. Expenditures

### 3.6.3 Expense Approval

All expenses of the village collective must be applied by the individual to the secretary of the village party branch and the director of the village committee, and only after all the applications are approved can they write a cheque for withdrawal from the finance department. The village party branch secretary and village committee director can approve or reject the application form received, as shown in Figure 13.

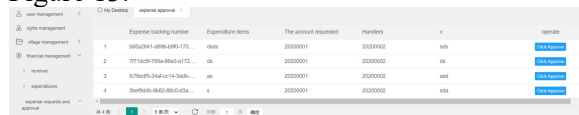


Figure 13. Expense Approval

## 4. Conclusion

This paper proposes a design and implementation method of smart new rural information government management system, which hierarchizes and unifies rural personnel management, gives different use rights to people at different levels, and solves the problem of imperfect personnel management system. MVC architecture is adopted to connect the data of the front-end and back-end databases, access and interact with the database, solve the problem of redundant data management, enhance data accuracy, and improve the fineness of statistical analysis.

## Acknowledgments

This work was supported by Innovation and Entrepreneurship Training Program for college students in Heilongjiang Province (S202210231015)

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