Construction and Key Technologies of “One -off Dialing Service” Transport Service Supervision System

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Abstract. The construction of 12328 telephone is a process of gathering wisdom from multiple sources, focusing on top-level design, and advancing as a whole nationwide. In the process of project construction, combined with the public's demand for travel services and the improvement of the transport industry's governance capabilities, the "12328" telephone system was researched from top-level design, technology research and development, system construction, and data application. Moreover, technological breakthroughs have been carried out based on key and difficult areas. Based on the above research, the telephone service resources of all areas of the transport industry have been integrated, and the national transport service supervision telephone ‘12328’ one-off dialing service has been realized, and an efficient, smooth and convenient channel for public sentiment and information service has been formed. The 12328 transport service supervision system with unified standards, reasonable structure, complete functions and efficient operation has been established nationwide. And by reserving interfaces with related industries, promote the interconnection and intercommunication of comprehensive transport service supervision information and the collaborative processing of business.

Keywords: One-Off Dialing Service, System, Key Technology

1. Introduction
The 12328 telephone system relies on information technology and technological means, which is a transport service supervision system, with the telephone 12328 as a main body and with relevant website, WeChat and short message as supplement [1].

In August 2013, the Ministry of Transport issued Some Guidelines on Improving and Upgrading Transport Services (J.Y.F. [2013] No. 514), and proposing “open the supervision telephone of national service”, “unified supervision telephone number of transport services”, and “achieve the ‘One-off Dialing Service’ for transport service supervision, business complaints, information consultation, acceptance of opinions, etc.”.

With the support of the Ministry of Transport, the construction of the national transport service supervision telephone - 12328 was launched in 2015. Based on integrating the existing transport service telephone resources in various places, the construction of standard system and systematic design, and the overall promotion of data application, 12328 telephone was established through a
unified national platform for transport services supervisions, which is a unified national telephone system for supervising transport services. Its content covers system construction, operation, management and service, and it has solve key issues such as telephone information connectivity and automatic data uploading among ministries, provinces and municipalities as well as highways, waterways, urban passenger transport and road transport. A 12328 transport service supervision system with unified standards, reasonable structure, complete functions and efficient operation has been established throughout the country [2-5].

2. Composition of the System
The ultimate goal of 12328 telephone construction is to establish the cross-regional and cross-field public services and industry 12328 "One-off Dialing Service" service supervision system, and to realize the networking operation of the communication support network at three levels of ministry, province and city, and to realize the interconnection of 12328 telephone system in construction, operation, management, service and other links. Technical system, operation system, assessment system and data application system have been established to achieve the above goals [6].

2.1. Technology System
Based on traditional voice technology and combined with modern multimedia technology and smart terminal technology, a cross-regional and cross-field service supervision system with 1 set of standards, 2 major business systems, 3 levels of operation networks, 2 types of databases and 8 service channels have been established. Namely, a set of technical standards and management systems related to system construction and operation management has been formulated, two major business systems of 12328 telephone acceptance and management have been established, the communication support network of the ministry, province and city has been networked, two basic databases of “Business Database” and “Knowledge Database”, and eight service channels including WeChat, Weibo, mobile client (APP), short message, email and other eight service channels have been expanded to achieve 12328 "One-off Dialing Service" of public service and industry supervision [7].

![Figure 1. Technical architecture of 12328 telephone system](image)

2.2. Operation System
Based on the above technical support, the unified acceptance and settlement of telephone services by 12328 telephone service centers all over the country have been achieved. For the handling process of 12328 telephone services of the competent transport departments at all levels and their internal institutions, directly affiliated units and agencies, the unified business process design of “unified acceptance, classification transfer, timely tracking, reply to feedback, processing and filing, random inspection and return visit” has been achieved. Combined with the actual business flow process between subjects in the aspects of accepting, undertaking, handling and caller, the closed-loop management has been achieved [8].

2.3. Evaluation System

(1) Criteria of assessment
Through the unified business process specifications, general technical requirements, business classification and coding standards, data exchange standards and system interface technical requirements, statistical index system and knowledge base data elements, etc., the service standard, workflow and coordination mechanism of local telephone are unified. According to the requirements of Regulations on 12328 Telephone Management, etc., the telephone location, division of responsibilities and personnel allocation are defined to ensure the coordinated cooperation of 12328 telephone business and system.

(2) Appraisal system
According to Measures for Service Quality Evaluation of Telephone System Operation and other systems, dynamic monitoring and evaluation of telephone system operation process are carried out, which are published through the Traffic Newspaper and 12328 WeChat public channels. According to operation service quality evaluation of 12328 telephone system, incentives and restraints are established to ensure the standardized operation and service quality of telephone system, so as to mobilize the enthusiasm of transport departments at all levels, 12328 service centers and transport operation and service units, and to enhance the interconnection of the construction, operation, management, service and other links of the 12328 telephone system [9].

2.4. Data Utilization System

A national 12328 telephone data sharing, information analysis and release system is formulated to summarize, analyze and study all kinds of information deposited in the telephone system, which can provide support for macro study, risk early warning and aid decision making [10].

(1) Set up business classification indexes
In view of all local traffic business matters and the situation of the centralized departments, 12328 four-level index system is established as the basic basis for telephone operators to classify the calling business according to the principle of seeking common ground while reserving differences, and accurately integrating all telephone matters into a unified index [11].

(2) Carry out information analysis
Based on the classification index system of telephone services, 12328 telephone information is analyzed with comprehensive application of 12328 data and case analysis as the core in order to timely grasp the development trend of industry, make accurate policies, provide accurate services, and provide reference for carrying out industry management timely and efficiently [12].

3. Key Technologies

3.1. Intelligent Matching Module
As the national service supervision telephone for transport industry, it shall solve the problems of interconnection and data exchange and sharing between the systems at all levels of the ministry and provinces and different business departments such as highway, waterway, urban road, road transport and maritime affairs departments and to achieve the integration and unity of all departments involved in the telephone system and to show the multi-level and multi-center characteristics. Due to the use of
different brands and models of call center equipment, the intelligent matching system of call center with automatic selection functions has been developed. Based on the optimal matching algorithm, it can achieve the intelligent matching function to meet the requirements for the efficient, stable and reliable operation of the national transport service supervision telephone system, and to lay a foundation for the achievement of the interconnection and interworking between provinces and cities of telephone 12328, and pay an important role in dealing with the huge instantaneous telephone traffic impact caused by weather, policy and other influences in various regions [13].

3.2. Data Exchange Platform
12328 Data exchange platform receives real-time data submitted by all provinces, and collecting and processing the data to achieve the exchange of trans-provincial data, and exchange and sharing of industry data. The platform support the WeChat business handling function. Users can submit the business orders through the 12328 WeChat service system, and switching to the corresponding province through the exchange platform. Users can inquire the progress of submitting business orders [14].

Industry data sharing can achieve the services of all interfaces specified in Transport Services Supervision Telephone System - Part 3: Technical Requirements for Data Exchanges and Information Sharing Interfaces, and the data submitted to the ministerial-level platform by the national provincial 12328 platform in real time and non-real time can be received; as the exchange center, the platform can provide the transfer service for service docking between provinces, and keeping the complete and searchable business records [15].

3.3. Decision Analysis System
The decision analysis system has three functions, namely, complaint reporting, information consulting, opinions and suggestions. The system supports the three-dimensional analysis of any subject from different dimensions, and displays in the form of reports or diagrams; the system can analyze and track the important hot spot consultation and complaint reporting problems, timely grasp the bursting points and situations of complaints, and analyze the quarter-on-quarter growth and year-on-year growth of the indexes such as the quantity of 12328 telephone services, immediate response rate, percent of call completed, prompt settlement rate, spot-check and return visit rate, satisfaction rate of business processing [16].

3.4. Word Order Management System
The work order management system provides the flow and comprehensive query function of work order. Each node of work order flow is an important link of work order processing module, which is mainly responsible for unified processing of the work orders transferred from the provincial data platform, and send them to the relevant responsible units for unified treatment; comprehensive inquiry can be used to inquire the detailed information and the voice conditions of incoming or outgoing calls. At the same time, the system also has work order acceptance, dispatch, return, reply and other functions [17].

3.5. Knowledge Base Management System
The knowledge base management system of the 12328 telephone system mainly supports the maintenance of knowledge input, review, release and other knowledge base. The knowledge base includes the policy document base, trouble shooting base, service guide base, organization information base, notice and announcement base, typical cases, etc., and maintenance includes addition, editing, deletion, keyword maintenance, etc [18].

3.6. Information Release System
The 12328 information release system can release the guidelines and purposes, functions and responsibilities, document systems, relevant leaders, announcements and news of transport service
supervision. Service supervision guidelines include the acceptance scope, acceptance channel, acceptance process, rules, regulations, etc.; the document system includes the laws and regulation related to transport, administrative documents, the administrative process of government work [19].

3.7. WeChat Service System
The public can use the public subscription number 12328 in information consultant, complaint report, opinions and suggestions. The WeChat service system interacts the service information to the 12328 business system. The current functions of WeChat public service platform and the application software development interface are used to achieve the transmission and management of 12328 public subscription information, and to achieve data interconnection and interworking with 12328 transport service system, and to enrich and expand the use channels and convenience of 12328 telephone service system [20-22].

4. Conclusions
"12328" telephone is used as the “One-off Dialing Service” of service supervision in the transport industry. Its business covers highway, waterway, urban passenger transport, road transport, maritime and other business fields. It is an important carrier for transport competent departments at all levels to listen to the public opinions and suggestions and to collect intelligence, and it is an important channel for the masses to express their aspirations, reflect interest demands and participate in industrial governance.

The 12328 telephone construction project has formed a unified national transport service supervision platform through integrating the existing transport service telephone resources, and providing the efficient, smooth and convenient service channels of popular sentiment reflection and information service. To solve the problems of connectivity and information sharing, the 12328 transport service supervision system with unified standards, reasonable structure, complete functions and efficient operation has been established, and the interface with related industries has been reserved to interconnection of the supervision information of comprehensive transport service and the cooperative processing of business.

References
[1] Wang Renjie. “Three-horizontal and three-comprehensive” mode of convenient service hotline—Take Shanghai “12345” hotline as an example [J]. Shanghai Urban Management, 2015(1): 78-80.
[2] Wang Fang. Discussion on the application of K2 technology in improving the usability of information systems [J]. China New Telecommunications, 2020, 22(11): 86-88.
[3] Guo Muyang. Design and implementation of information-based system based on Remote App technology [J]. Network Security Technology & Application, 2020(07): 70-72.
[4] Zhang Weilong, LI Rongxian, Zhang Bo. Study on professional development information-based system based on big data technology [J]. Computer Knowledge and Technology, 2020, 16(20): 38-39.
[5] Xu Wenhui, LIU Chunlin. Study on intelligent water conservancy information system based on Internet of Things technology in new era [J]. Information Technology and Informatization, 2020(04): 200-201.
[6] Sun Tingting. Discussion on the design of business process management system based on information technology [J]. Information Technology and Informatization, 2020(04): 9-11.
[7] Lin-Yu H E, Chuan-Xin Z, Hao F. Design of telephone system for 12328 transport service supervision in Yunnan province [J]. Value Engineering, 2019.
[8] He Linyu, Zhao Chuanxin, Fang Hao. Design of 12328 transport services supervision telephone system in Yunnan Province [J]. Value Engineering, 2019, 38(19): 215-216.
[9] Wang Xiaotian. Construction of hospital information system based on information technology development [J]. Medical Information, 2019, 32(06): 25-26.
[10] Feng Bing. Application of intelligent identification technology in enterprise information system [J]. Electronic Technology and Software Engineering, 2019(03): 60.

[11] Zhang Liangjing. Analysis of engineering design information management system based on J2EE technology [J]. China Hydropower & Electrification, 2019(10): 1-5.

[12] Lu Jinsheng. Design and application of production management information system of urban transport [J]. Railway Computer Application, 2019, 28(07): 62-65.

[13] Luo Wei. Discussion on the design of logistics management information system [J]. Enterprise Technology and Development, 2019(06): 97-98.

[14] Zhan Qijin. Study on efficiency improvement of Guangzhou transport service hotline [D]. South China University of Technology, 2019.

[15] Su Tiantian. Study on enhancing the work of transport service supervision telephone 12328 in the new era [J]. Transpo World, 2018, No. 471(21): 18-19.

[16] Zheng Yueping, Ma Xiaoliang. Promote the construction of smart government through using the government affairs hotline data---Take Guangzhou Government Affairs as an Example [J]. E-Government, 2018, 192(12): 26-34.

[17] Yang Pengyan, Chen Weiwei, Fu Jiazhen. Research and implementation of transport service supervision telephone system based on CXF data exchange platform [J]. Internal Combustion Engine & Parts, 2017(13): 128-129.

[18] Xu Ning. “One-off Dialing Service” is the direct embodiment of service-type government [N]. Jiaxing Daily, 2017-12-19(001).

[19] Li Zhengyin, Xia Siming, Jin Chunliang. Study on application of transport service hotline data in industry management [J]. Technology Innovation and Application, 2017(32).

[20] Qingxia F, Xiaoqian L. Study on implementing the 12328 traffic and transport service supervision telephone in Bayannur [J]. Highways & transport in Inner Mongolia, 2016.

[21] Minkoff S L. NYC 311: a tract-level analysis of citizen government contacting in New York city [J]. Urban Affairs Review, 2016, 52(02)

[22] Nam T, Pardo T A. Building understanding of municipal service integration: A comparative case study of NYC311 and Philly311 [J]. 2013: 1953-1962.