Analysis of Comprehensive Application of Data Information Logic in Subway Information Guidance System

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Abstract. In recent years, the integration of subway information system has developed into a network data service platform with new service functions and broad development prospects. Its essence is the overall planning and optimization of data resources and it provides scientific solutions for improving system functions and for enterprise decision-making and management. The data information logic model is a relatively new data integration processing method. It can edit, integrate and plan independent decentralized data information resources among each other into a unified resource library, identify the data in them and create corresponding directories. The source data information is determined so as to achieve sharing in the process of data inheritance. The main advantage of the data information logic model is that the system can still be used after the upgrade and is good at mining the hidden value of the data. The middleware model is currently the most used data integration solution in enterprises. It mainly uses visual logic diagrams to extract hidden information of enterprise data in advance to help users more clearly grasp the context of data resources.

Keywords: Data Information, Logic, Subway

1. Introduction

With the continuous improvement of domestic subway information informatization construction, the demand for data resources in the development of subway information is constantly increasing. At present, there are often many different types of systems within subway information and each system has a huge number of systems. It is these data resources that support and maintain the good operation of subway information. With the rapid development of information technology, cloud sharing, cloud storage and cloud computing have been implemented within subway information. The need for data resources is also more complicated. How to achieve efficient integration of data resources in heterogeneous data has become the current information.
2. Data information logic overview

The data system is essentially the integration and coordination of dispersed data devices, information resources and processing functions in the same associated system with the help of computers and network interconnection systems. It is a complex system concept[1]. The ultimate goal is to improve the convenience and efficiency of resource sharing and implement unified and efficient centralized management of data resources. From the perspective of enterprise development, system logic refers to the overall logic from all aspects of enterprise organization structure to technology management. Its essence is that all elements that affect the profitability of enterprises are included in the concept of system logic. Using computer program system to edit and store information data resources, draw corresponding conclusions based on its internal laws, provide valuable information for target users, help enterprises make production and operation decisions and thus improve the company's response to emergencies and system management. ability. The basic characteristics of information system logic include: First, focus on customer needs. The establishment of the system is to provide services to customers; second, the standards established by the system are based on consumer needs; third, the system itself is a technical behavior tool integrating design, organization, development, optimization, testing and other functions; Fourth, the system content involves multiple aspects such as marketing, management and technology; fifth, the system itself comprehensively considers costs and benefits. The logical structure of data information is shown as figure 1.

![Logical structure of data information](image)

**Figure 1.** Logical structure of data information

3. Design of subway information guidance system

The subway information guidance system is a ubiquitous multimedia platform built in subway stations, tunnels or trains, relying on high-bandwidth network technology, to provide effective reminders to passengers. The subway information guidance system provides passengers with information on train operating hours, government announcements, news reports, weather forecasts, advertisements, safety instructions and promotion of subway culture. Provide emergency evacuation instructions in the event of fire and train congestion and enhance the safety of urban rail transit operations. (1) Provide passengers with high-definition media programs and public service commercial advertisements, so that passengers can obtain interesting external information while waiting for tickets or waiting for the bus.
(2) Provide passengers with train arrival information, remind passengers of waiting time and reduce passengers' anxiety while waiting. (3) In the transfer channel or transfer area of a large transfer station, the auxiliary station guide signs guide passengers to complete the transfer quickly and safely, so as to avoid confusion of passenger flow and affect the normal operation of the station. (4) On the station or the train that is about to enter the station, effective information such as the landmark building name of the station or the representative shopping mall is displayed on the display screen, which is convenient for passengers to choose and reach the destination. (5) In the event of an emergency such as a fire, terrorist attack, train failure, etc. in the station or train, the subway information guidance system can notify passengers of the disaster warning information at the first time and play the trigger broadcast information, non-playing information defined in advance according to the emergency plan. (6) Train video surveillance images are uploaded to the central operation platform through the vehicle-ground wireless network of the subway information guidance system, so that the operator can handle the situation as soon as possible according to the train site conditions to ensure the personal safety of passengers. For example, it is in 10 # and 11 # The relevant parameters of the area are shown in the table 1.

| Parameter   | 10# | 11# |
|-------------|-----|-----|
| AI (4-20mA) | 49  | 56  |
| AI (PT100)  | 36  | 36  |
| AO          | 1   | 1   |
| DI          | 191 | 191 |
| DO          | 111 | 111 |
| SOE         | 15  | 15  |
| Amount      | 403 | 410 |

4. Application of data information in subway guidance system

4.1. Daily information collection

Communication refers to the exchange of various data between two or more devices or people. Information in emergency response needs to be effectively communicated between dispatch, stations, drivers, professionals and persons in charge at all levels, so as to reach a consensus on the nature of the accident, emergency response objectives and recovery of operations as soon as possible. Good communication skills can change people's views on you and it is easy to reach a common agreement with the other party to establish a friendly cooperative relationship[2]. Whether it is train rescue or bus connection in the control center; whether it is fault information collection or scheduling decision processing, it is necessary to communicate well with relevant department personnel before, during and after the event, so that the expected social and processing effects can be obtained. The regulations

3
require that information be notified by telephone, especially after the subway is changed and the ESC and ESC of the control center are assigned to the maintenance center\textsuperscript{3}. In the event of an emergency, each transfer is busy organizing the troubleshooting, ignoring the transmission of information and often conducting it verbally. The verbal report information is based on the tacit understanding of the coordination of the various adjustments. It is the fastest method of information transmission. The problem is that it may cause information distortion or neglect. The assistant of the chief of duty in the control center mainly receives the faults reported by the station and traffic control personnel in daily work and comprehensively informs the information and feedback information, statistics the fault information according to the requirements and publishes the fault work order to the counterpart. Existing problems: Due to changes in the duties of assistant supervisors, more signal failures are prone to occur and failure work orders are not issued. At the same time, assistant supervisors may miss the "Fault Record Form". The value of the record of the help is not comprehensive and the failure follow-up situation is not filled in\textsuperscript{4}. Rectification measures: The assistant to the duty chief carefully filled out the fault record form, revisited the classification of the bad technical status in the "Management Measures for Metro Production Equipment" and recorded the fault category.

4.2. Emergency information processing

Usually develop good habits, always prepare papers and pens to make records. Main points should be recorded when a fault occurs. Behavior Observation: The assistant to the supervisor on duty should understand the work flow of the line. After receiving faults reported by drivers and station personnel, their behavior and expressions will be nervous and they will be sensitive to information. At this time, we must listen carefully to the conversation between the driver and the driver and collect information. At the same time, the survey should inform the assistant of the shift supervisor in time to prevent the information from being blocked. Collecting information through device display: The assistant to the supervisor on duty should collect information by looking at the central large screen display and the HMI alarm. It can be collected by viewing the alarm information of the ESC main control and the ESC main control system\textsuperscript{3}. Collecting information through inquiry: The assistant to the supervisor on duty can obtain fault information by inquiring about line, electric and environmental adjustment. When each position is busy dealing with the fault, you can get information from other professional dispatchers, station personnel and on-site personnel and make records. In the case of information notification in case of failure, it is recommended that the OCC call each telephone for notification to strengthen information sharing through multiple communications. The assistant on duty is the key position for the information collection and release of the control center. Therefore, the assistant on duty needs to fully master the driving business knowledge, strengthen the learning of driving, signaling and vehicle professional knowledge and require yourself at the level of driving scheduling to ensure that you can quickly understand in the event of failure 3. Master the procedures of line adjustment processing and extract key information in a targeted and focused manner to release “Enterprise Information Communication” in time. The assistant on duty should understand the names and functions of various equipments, such as the names and functions of automatic switches on trains and the functions of SICAS and FEP signals. When a fault occurs, collect the fault elements and compile the information for release to ensure that the release is accurate and efficient. Finally, the method of information collection needs to be continuously summarized and improved on the job post and the assistant to the duty supervisor also needs to strengthen the study of theoretical knowledge. The method of information transfer requires further requirements\textsuperscript{6}. 

4
5. Conclusion

As the system where passengers receive the most information during the whole process of passengers riding on the rail transit, the subway information guidance system plays an important role in improving the comfort of passengers' riding experience. At the same time, it also generates huge benefits for rail transit operations. Therefore, the setting scheme of the display equipment of the subway information guidance system needs to be closer to the needs of passengers and a more novel display method can attract passengers' attention. With the continuous improvement of the technical level, the structure of the subway information guidance system has been continuously improved and the display methods of display devices have become more diverse. While meeting the needs of passenger services, it has also enhanced the positive image of rail transit in urban development.

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