

Research on the Construction of "One Network for All" in the Field of Smart Campus Services

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Abstract: In the context of the new era, China has put forward new requirements for smart campus services. This paper firstly analyzes the current situation of the development of smart campus services, and leads to the conclusion that exploring and optimizing the construction of "one network for all" will become the main trend in the development and construction of smart campus services. Secondly, analyzing the importance of "one network for all" for the construction of smart campus services through the "one network for all" construction of "smart government". Thirdly, the construction method of "one network for all" is described from three aspects: architecture, construction path, and key technologies. Finally, the construction significance of "one network for all" in the field of smart campus service is summarized and prospected.

Keywords: "One Network For All"; Smart Campus; Campus Services; Informatization Construction

Introduction

The new round of technological revolution and the rapid development of new technologies such as AI and 5G have also brought new opportunities and challenges for universities to accelerate the transformation of school operation and management models and implement innovation-driven development strategies. With the implementation of the Education Informatization 2.0 Action Plan and the 14th Five-Year Plan, education informatization has been further developed in various segments, and the construction of smart campus services has also achieved certain results. China has issued various policies to achieve the goal of "one network for all" in education management services, which is important to deepen the reform of "streamline the government, delegate power, and improve government services", promote the modernization of university governance, improve the level of university services, and further stimulate the vitality and creativity of university services.

1. The Development Status of Smart Campus Services in the New Era

Although most universities in China have implemented smart campus service construction to varying degrees, the construction of smart campus services is still in the primary stage. Firstly, most universities do not attach enough importance to smart campus services; Secondly, the management system for the construction of smart campus services is not yet perfect; Thirdly, the informationization literacy of campus service management personnel has not been well formed^[1]. As China enters a new stage of development, the main goals of smart campus work have also changed. Smart campus services, as an important part of smart campuses, should fully consider the needs of teachers and students, while combining with the objectives of smart campus to promote vigorous changes in smart campus services and promote management and services to a new level.

2. The Importance of "one network for all" in the Construction of Smart Campus Services

With the implementation of the "one network for all" government services in various provinces, a new path with feasibility and operability has been provided to achieve "smart government"^[2]. The functions of university campus services are similar to government. The implementation of "one network for all" in university campus services is a trend that adapts

to the modernization of China's governance capabilities. The "one network for all" has transformed the concept of "manager centered" university smart campus services into "user centered" services. "One network for all" is the product of the new needs of teachers and students in the new era, a new form that has emerged with the widespread application of information technology in the university campus services, and a new stage of one-stop services for smart campuses. Through the construction of "one network for all", firstly, it improves the service collaboration among various departments of campus services, promotes the sharing and integration of resources, and forms a good working pattern; The second is to provide personalized services based on big data for teachers and students, forming personalized pages that make campus services as convenient as online shopping for teachers and students; The third is to strengthen the reshaping and integration of campus service business, improve the level of campus service, innovate service models, and enhance service experience^[3].

3. The Construction Method of "one network for all" in the Field of Smart Campus Services

3.1 The "one network for all" architecture

The construction of "one network for all" in the field of smart campus services consists of five levels: Basic framework layer, Data processing Layer, Logical processing layer, Application integration layer, and user interface layer.

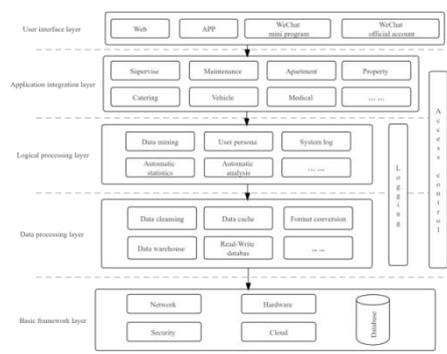


Fig.1 The "one network for all" architecture

Basic framework layer: Provides the basic environment required for the operation of "one network for all", including network environment, security environment, hardware equipment, etc.

Data processing layer: realizes the data pedestal of "one network for all", unifies the management of structured and unstructured data, and performs data cleaning and supplies high-quality data according to the needs of other layers.

Logical processing layer: Through data mining on the data processing layer, the user persona is updated. Based on user persona, make decision plans that meet the needs and expectations of teachers and students, using technologies such as user persona, automatic statistics, and automatic analysis.

Application integration layer: Implement access integration for all applications required for smart campus services through microservice frameworks. Including: supervision services, maintenance services, AI customer service, etc.

User interface layer: Implement UI design adaptation and access to functional application portals in various environments. The ones that need to be adapted include: web, app, WeChat mini programs, etc.

3.2 The Construction Path of "one network for all"

To build a "one network for all", the first step is to comprehensively sort out service projects for teachers and students, streamline and merge similar matters at different levels and departments, clarify standards for each business, reshape the service processes, standardize the work requirements, and solidify work guidelines. Secondly, to align with the unified standards and specifications of school information technology and related requirements, the establishment of multi-format, multi-entry "one network for all" online platform, the school should also be complemented by the establishment of offline physical office hall, online and offline close integration. Finally, corresponding policies and systems should be provided to assist. All departments of campus services should actively participate in promoting building "one network for all", uniformly

accept service supervision, announce the acceptance process and processing time limit to teachers and students to work efficiently, and jointly maintain the continuous and healthy operation of the system.

3.3 Key technologies in the construction of “one network for all”

3.3.1 BI and user persona

Because the "one network for all" will generate a large amount of data during the service process, firstly it is necessary to introduce BI technology to collect, model, integrate, and deeply analyze the scattered campus life, management, and service data in various application systems, and then abstract the user behavior of teachers and students into a category labeled with multiple tags to understand the characteristics, interests, preferences and actual needs of teachers and students. Finally, summarize teacher and student users behavior, make a user persona of teacher and student users and achieve recommendation based, customized, and personalized service content.

3.3.2 Cloud Computing

"One network for all" has the characteristics of large instant access and high requirements for data processing capability. In order to meet the requirements of cost reduction and efficiency enhancement, cloud computing architecture is introduced to build the "one network for all" system, which can significantly reduce duplicate construction and duplicate deployment of existing functions. Meanwhile, a unified distributed storage system is used to store structured data and unstructured data, unified data management can improve the stability and flexibility of the system.

3.3.3 Artificial intelligence

Primary artificial intelligence technologies such as AI customer service have been widely applied in the "one network for all". As can be seen from the current boom in intelligent chatbots, AI can significantly reduce the complexity of operations for students and teachers using the service, and with key technologies such as IOT, user profiling and cloud computing linking various business systems and offline devices, it will make the service easier, smarter and more personal.

3.3.4 Internet of Things and Smart Devices

The "one network for all" is not just an online service software or a simple service application integration portal, but a smart campus service system that integrates online and offline. The IoT is used to build the hardware foundation for smart campus services, to realise the interconnection of university campus service infrastructure and real-time data sharing, and to introduce intelligent devices such as unmanned self-service terminals on this basis, to innovate service means, promote the in-depth integration of online and offline services, and realise business coverage.

3.3.5 Microservice

The "one network for all" will integrate all the service points of university campus services, but if they are aggregated directly, it will result in cumbersome operations for teachers, students, and users when optimizing related services, and it will also become more complex when upgrading. If the microservice architecture is adopted, each functional service is divided into multiple service points, and services are divided according to their functional roles to achieve decoupling of business logic. This not only makes it easier for students and teachers to use the services, but also allows technician to upgrade their functions without having to upgrade all the services, but only the function-related service components.

4. Summary and outlook

The "one network for all" is the "new business card" of smart campus services in the new era, providing a practical evolutionary route and solution for the university to promote the modernization of campus governance and standardization of campus services. Through the construction of "one network for all", the process of transaction handling and collaboration is standardized, and the in-depth integration of online and offline services is promoted, so as to gradually realize one-stop solutions for internal and external affairs, and achieve unification of technology, architecture, services and user experience.

The construction of "one network for all" will effectively enhance the development process and construction level of the school's overall one-stop service, and also lay the foundation for subsequent access to government services "one network for all". Through the in-depth popularization of the "one network for all", it will help schools comprehensively improve their

scientific decision-making, precise management, and personalized service levels, and achieve the goal of supporting the construction of a high-quality education system.

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