

Discussion on the Top Level Design and Practice in the Construction of University's Smart Campus

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ABSTRACT. *With the continuous development of social development process, under the background of the current Internet information age, the teaching field has gradually faced many opportunities and severe challenges created by educational informationization. The construction of digital smart campus has become an inevitable place for the current teaching work. Tendency. This paper focuses on the top-level design of colleges and universities in building smart campuses, and puts forward the design ideas of “strategic guidance, business-driven, system planning, and strict argumentation” to realize the intelligent management, learning and life of colleges and universities.*

Keywords: *colleges and universities; smart campus; top design*

0. Introduction

China's education informatization began in the mid-1980s. The development process of more than 30 years has made information technology more and more deeply integrated into the various businesses of education and teaching^[1]. How to improve the level of informatization and intelligence in the field of education, especially the top-level design and practical application of smart campuses in colleges and universities, and the development of smart healthcare, smart transportation, smart communities, smart cities, etc., is the reality of the development of smart education. The problem is also a major challenge facing the construction of smart campuses in colleges and universities. Therefore, this paper explores the top-level design and practice in the construction of smart campuses in colleges and universities.

1. Brief description of the meaning of smart campus

The Smart Campus is a broad concept and is a general description of “Technology + Education + Management + Service + Ideas”. This study believes that the smart campus is based on the education information infrastructure, using cloud computing, Internet of Things, big data, virtual technology, sensing technology^[2], mobile communication technology and other new generation information technology to comprehensively perceive and integrate and share various types of education. Information resources; guided by the business needs of teaching, learning, research, use, management, etc., to build a comprehensive information resource platform that is personalized, digital, networked, integrated, integrated, synergistic, integrated, and intelligent; Diversified entities such as teachers, school administrators, alumni, parents and the public provide intelligent services; deep integration of technology, education, management, mechanism and culture to form smart learning, smart teaching, intelligent research, smart application, wisdom Social, smart management, smart decision-making, smart service and smart life are the new modes of integrated education of “community”, creating a new space for informationization and intelligent new environment that is easy to learn, teach, work and live.

2. smart campus top design

The construction of a smart campus is not a simple information project, but a complex system engineering that integrates a new generation of information technology and education management^[3]. The top-level design of the smart campus is to take into account the environmental elements of technology, business, management, service, mechanism and culture, and coordinate, match, support and integrate each environmental element. Specifically, the overall architecture of the top-level design of the smart campus mainly includes nine major systems: organizational structure, business process, institutional standards, campus culture, platform construction, public services, operation and maintenance security, information security, and supervision and evaluation (see Figure 1).



Figure 1 Overall architecture of the top floor design of the smart campus

2.1 organizational structure system

The organizational structure system is the organizational structure, functional responsibilities and coordination mechanism for promoting the construction of smart campuses, including the leadership decision-making system, implementation implementation system and expert consultation system. It consists of an informationization work management committee, an implementation team and an expert advisory committee, forming a two-level information management work mechanism. The informationization work management committee is composed of school leaders and leaders of various departments. It has an informationization work management office (standing in the network information center)^[4]; the informationization work execution group is composed of the network information center and the main leaders of various departments, and the information construction

The expert advisory committee consists of professors, senior engineers and external experts.

2.2 Business Process System

Define, model, simulate, start, execute, monitor, analyze, optimize, etc. various types of business by drawing on the basic business needs of the school and drawing on the business process management (BMP) lifecycle management method in enterprise resource planning (ERP). Business modeling based on the BPMN 2.0 standard enables each business unit and transaction activity to be quantified, indexed, and standardized to achieve global optimization of business processes.

2.3 System Standard System

The system standard system includes standards, norms, systems, and mechanisms in terms of technology, management, and services. Through the development of information management project management methods, operation and maintenance management methods, network and information security management methods, etc., the relevant technical standards such as data architecture, business architecture, technical architecture, application architecture, etc. were determined, and technical manuals and operations for various system maintenance were prepared. Guides, as well as the CIO system, personnel training system, performance appraisal system, etc.

2.4 Campus Culture System

Wisdom culture is an innovative consciousness culture formed on the basis of inheriting the traditional campus culture spirit and having the characteristics of network culture, embodying the advanced campus spirit and condensing the “positive energy” of the era in the process of interaction between people and smart environment in the context of informationization. The campus culture system mainly includes material culture^[5], institutional culture, behavioral culture and spiritual culture, such as small “i” culture, website culture, and new media culture.

2.5 platform construction system

The platform construction system includes: the perception layer realizes the comprehensive perception between “human-machine-object”; the infrastructure layer storage equipment place; the network layer creates the network environment; the data layer realizes the storage backup of various data; the support layer constructs the unified support platform The application layer serves as a teaching and research, service, management, and life multi-service software application system; the presentation layer provides personalized information services through multiple websites. Such as teaching, research, finance, personnel, assets, logistics, office, student status, enrollment, employment and other systems and “ihome” integrated application platform.

2.6 Public Service System

The campus public service system includes various educational resource services such as book archives, online education, scientific research equipment, infrastructure, university student services, sports, talents, culture and information security. Specifically, the “1+1” model and the “Belt and Road” model are used in conjunction with relevant universities to provide books, research, online education, infrastructure, information, talents, culture, etc. to the campus and beyond. Public Service.

2.7 Operation and Maintenance Security System

Established a unified management system for operation and maintenance personnel, operation and maintenance technology, operation and maintenance resources, operation and maintenance process, operation and maintenance system, etc., using centralized monitoring, collaborative linkage, hierarchical responsibility and standard service, providing 7 days and 24 hours. The all-weather operation and maintenance support service provides a safe and reliable operating environment for the planning, construction, implementation and management of smart campuses.

2.8 Information Security System

The information security system consists of physical security, network security, data security, application security, content security, user security and security management. It strengthens the information security system from multiple aspects such as technology, management, systems and applications. Anti-virus, intrusion detection, unified authentication, network auditing, data encryption, access control, virtual private network (VPN) and other technologies to ensure information security^[6].

2.9 Supervision and evaluation system

Based on the actual combination of school characteristics, detailed evaluation indicators are developed from top level design, organization management, infrastructure, information resources, data center, network application, system application, information security, information management, process management, talent construction and system construction. Make full use of information technology to open information, online interaction, online evaluation, and network supervision to realize the wisdom supervision and wisdom evaluation of smart campus.

3. The application of top-level design of colleges and universities' smart campus

3.1 card

One-card service is one of the most important applications in the construction of Smart Weihang. It is a centralized application of integration, networking, integration and intelligence. The background of the card is composed of hardware and software, software system, database, data exchange platform, terminal and other software and hardware. It mainly integrates all kinds of cards, certificates, tables, orders and tickets. Achieve certification, management, services, consumption, finance and other card multi-purpose functions, to achieve “one card in hand, campus worry-free”, centralized sharing of various types of data to solve the “information island”, reuse of various resources to avoid duplication of construction Integrating and integrating various business demands has improved the quality and efficiency of teaching, standardized and optimized various process standards, improved the management

and service level, and provided convenient, efficient and satisfactory personalized services for the teachers, students, study, work and life.

3.2 Integration

Integrated service is one of the most distinctive services of the construction of Smart Beihang. It adopts the service form of virtual online service hall and physical service hall to effectively solve the problem of “turning back” and “turning around” in the study, work and life of teachers and students. The problem has effectively improved the quality of school comprehensive management and public services. Established a comprehensive service hall for the teachers and students, a logistics service hall and a financial settlement center, and assigned various functional departments to station in the service hall to provide school printing, student status, graduation, going abroad, employment, household registration, scientific research, personnel, accommodation, logistics, tuition, The financial and other services, combined with the unified online comprehensive service platform provided by the online online service hall, realize the seamless connection of online and offline services, which is a concentrated expression of integrated services.

Conclusion

Based on cloud computing, Internet of Things, big data, mobile Internet and other new-generation information technologies, we will learn from the experience and achievements of digital and smart campus construction at home and abroad, and strengthen wisdom from multiple aspects such as technology, business, management, service, system and security. The top-level design of the campus is the ultimate goal of the construction of smart campuses in colleges and the inevitable trend of the development of educational information.

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