

Attempting Discussion on Reference and Realization Framework of Intelligent Service Type Digitized Campus Construction

Qin Gong, Zou Li, Li Jinfeng

Hubei Three Gorges Polytechnic, Hubei Yichang, 443000

Keywords: intelligent service type; digitized campus construction

Abstract: With the wide application of information technologies such as big data and cloud computing as well as implementation of campus informatization strategy, the informatization construction in universities of our country has entered a new development stage. In order to satisfy the teaching demands of universities in scientific research, the universities have invested a large number of capital to perfect the campus informatization systems and established relatively perfect basic information application system as well as campus platforms, which, however, can not satisfy the demands of teachers and students in actual application. This paper mainly analyzes the current development situation of smart campus, comprehensive information platform contents of campus and overall framework of intelligent service type digitized campus construction thus to provide reference for intelligent service type campus construction.

1. Introduction

The development and application of information technologies such as big data, internet of things and cloud computing have largely changed the life and production modes of people. Smart city refers to perceiving, measuring, analyzing and integrating the key data information for urban operation through big data and cloud computing in the process of applying the computer information technology and communication technology into the urban construction and management thus to make smart responses to various demands of city. In 2010, our country put forward the concept of smart city construction, and in 2012, published the first batch of 90 pilot cities in smart city construction. As one part of smart city, smart campus not only needs to develop commonly with smart city but also needs to be taken as the demonstration unit of smart city. Intelligent service type campus must absorb the development idea and experience of smart city and accelerate the digitized process by aid of information technology.

2. General Development Situation of Smart Campus

The campus informatization construction in our country has developed to smartness from initial networking, digitization and informatization, which plays an important role to promote the development of educational business of our country. Smart campus is a new idea raised based on education informatization and digitized campus and was firstly raised in Zhejiang University in 2010. It holds that smart campus should cover the campus network learning environment, the transparent and efficient campus administration affairs, convenient and fast campus life, as well as innovative campus scientific research environment. The Professor Jiang Dongxing of Tsinghua University thinks smart campus is the advanced stage of campus informatization construction and is the further expansion and extension of digitized campus and informatization campus. It comprehensively applies the emerging information technologies of internet, internet of things, big data, perceptive technology and AI to perceive the physical environment of campus, conducts intelligent identification on the personalized features of teachers and students as well as the work, learning and life scenes, combines the physical resources of campus with digital space to establish an intelligent and open teaching and life environment for the teachers and students thus to realize the education purpose of students first. Currently, some universities including Zhejiang University, Tsinghua University, Nanjing University of Posts and Telecommunications and Tongji University

have established smart campuses based on digitization, combined with the internet operation enterprises of China Telecom and China Mobile, implemented the one-card smart campus solution. For example, Beijing University of Posts and Telecommunications and China Mobile cooperate to research and develop the NFC campus one-card to implant the one-card function into NFC mobile phone thus to expand the application scenes of mobile phone.

3. Content of Intelligent Service Type Digitized Campus Platform

Campus is actually the epitome of one city and a relatively complex ecosystem, involving various aspects of teaching and scientific research, student management and campus construction, therefore, the intelligence service type digitized campus construction must face these complex ecosystems to satisfy the information demands of students and teachings in teaching, learning and life, and comprehensively improve the teaching environment, scientific research environment and life environment of universities. The intelligent service platform mainly includes the following aspects: firstly, standardize and unify the campus data criterion, manage and monitor the various campus data to realize fast publishing and subscription of campus data. Secondly, establish the campus process service platform, combine it with the current management information system thus to make simple campus affairs capable of being handled through network platform and monitor the whole business process. Thirdly, establish the one-form service, design the various campus forms in an unified way and simplify the operation process thus to avoid the students and teachers to fill in data form repeatedly and enhance campus management quality. Fourthly, establish personal data files of teachers and students, and then the teachers can know the actual situation of each student and formulate personalized teaching schemes for students. While the students can know the learning experience, teaching experience and scientific research situation of teachers through the files of teachers thus to enhance the understanding between teachers and students. Fifthly, establish the intelligent service type campus PC end and mobile terminal application platform thus to make operation easier for students and teachers. In the application platform process, it is needed to strictly follow the HTML5 standards to guarantee the system compatibility and universality, establish the one-stop comprehensive campus information service platform platform to make information technology serve the teaching, scientific research, campus management and socialized service, and enhance the intelligent service level of campus.

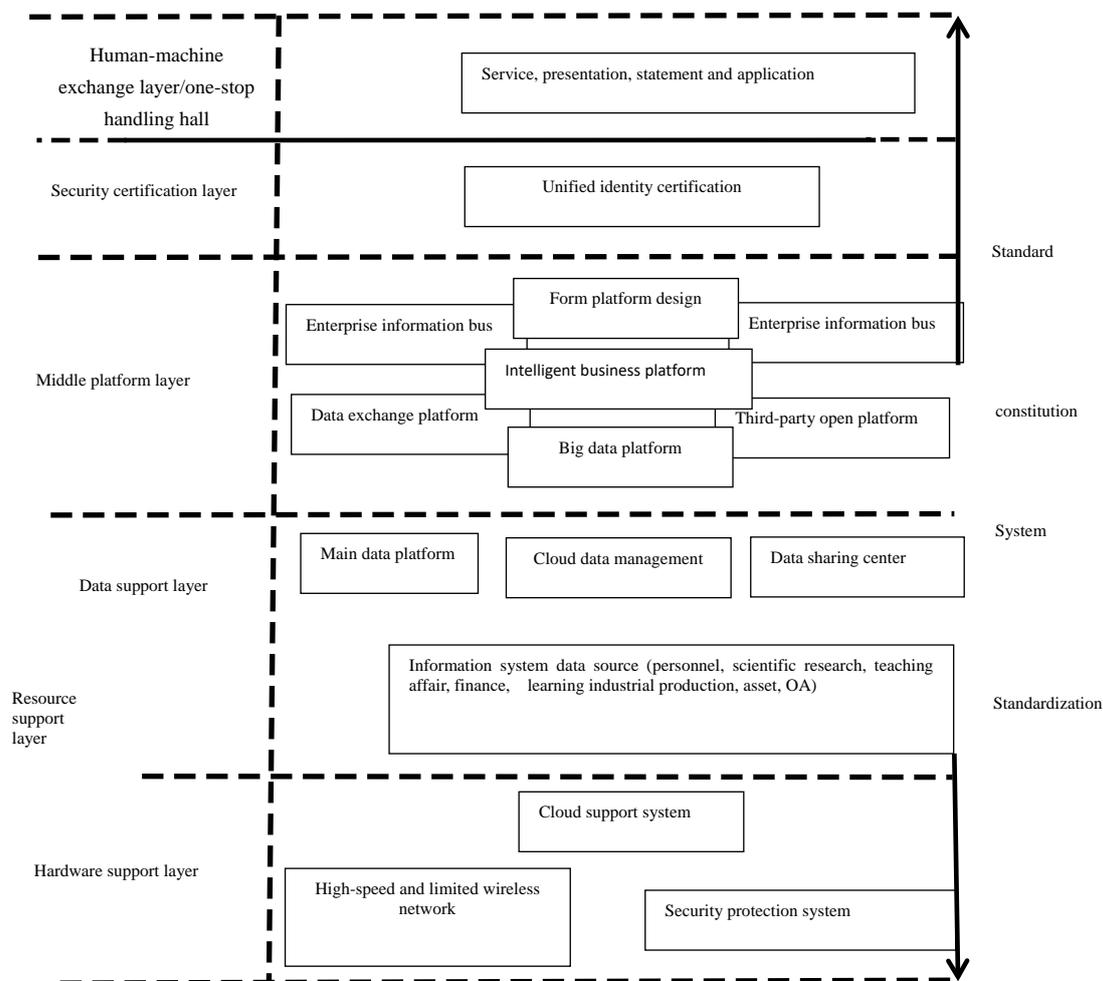
4. Reference and Realization Framework of Intelligent Service Type Digitized Campus Construction

Based on the above contents, the comprehensive campus information application platform includes four levels: human-machine interaction layer, security/certification layer, middle platform layer and resource support layer. The following diagram is the overall framework for realizing the comprehensive campus information application platform:

The human-machine interaction layer is the bearing platform of intelligent service type campus, its convenience and fastness directly affect the user experience. It should satisfy the following requirements in case of being designed: firstly, it bases on the process service platform and can be taken as the third-party service platform. In the design process, the third-party service platform technology standard and criterion should be formulated. Wherein, the third-party service refers to the standard developed and applied in server by the third-party software provider. All operations should be concentrated on the operation bearing platform instead of simple connection, besides, the integration third-party server operation situation can be monitored through the platform. Secondly, it must be displayed in various terminal equipment such as PC end and mobile end thus to adapt to the size of screen automatically. Thirdly, the management and supervision on the life cycle of the whole comprehensive campus information platform should be conducted.

The intelligent service type campus platform is established based on the internet of things and cloud computing, which records and stores the personal information of students and teachers, campus infrastructure and academic achievements of university, and plays the role of tracking. In

the information platform establishment platform, it is needed to not only consider to realize the business functions of university but also guarantee the secrecy of personal information of teachers and students. Therefore, effective security protection measures should be formulated in the campus service platform establishment process. The security/certification layer is the important measure to guarantee platform security. The unified personal identity certification platform will be established through the campus service platform, the teachers, students and administrators can only enter the system after passing the identity certification. On this platform, different access authorities will be set for different identities.



Middle platform is the tool platform of the whole service platform, including campus business process platform, intelligent business platform, big data platform, integration third-party open platform, statement design tool and information bus. Currently, the technologies of the modules of intelligent business platform, big data platform, integration third-party open platform, statement design tool and information bus are relatively mature. Therefore, this paper mainly introduces the business process and statement design modules. The statement design needs to adopt JAVA architecture for development, wherein, the front end adopts similar design styles of EXCEL, WORD and infopath and is compatible with various versions of word and excel. The statement design tool production format must be connected with the currently various mainstream process service platforms, and serve the web server. The business process service platform connects with mainstream service platform, therefore, in the design process, it is needed to cover the process production, process management and process monitoring, realize seamless connection between process service platform and statement tool to satisfy the various demands of users.

The resource support layer includes hardware support and data support, wherein, the hardware support mainly contains wired network and wireless network. Currently, most campuses have comprehensively realized full coverage of wireless network. The data management is relatively

weak, mainly containing master data and metadata platform;

The master data platform mainly sorts the various data information of universities, formulate the master data standard and norms according to different campus businesses, conducts effective sharing and integration based on established data in the earlier stage of school, realizes the monitoring and recording on data platform, meanwhile, submit detailed monitoring diary. The master data information change can be checked in real time and the master data history warehouse can be formed, besides, the manager can know the platform operation situation according to the history warehouse. Based on the user authority, the master data can be added, deleted, modified and referred. Based on the user demand, the system can conduct output by aid of word and excel form modules.

The metadata platform mainly used for sorting the campus metadata and formulating the metadata standard thus to realize the management and supervision on the data sharing library and various information database. The metadata platform and master data platform have different functions and design requirements. In the information connection process, the metadata platform can automatically obtain the metadata definition of data information library, modify and delete the data according to the definition standard.

5. Conclusion

In the campus management process by aid of the technologies including internet of things, cloud computing and virtual technology, it is needed to establish intelligent service campus, change the exchange mode among the teachers, students and campus resources, effectively integrate the campus teaching, scientific research resources and human resources thus to enhance the utilization rate of campus resources, satisfy the various demands of teachers and students in order to realize the intelligent service and corresponding campus management mode, improve the teaching quality and management level.

Acknowledgment

Fund project: Scientific research and development project of yichang city(A18-302-b07).

References

- [1] Zhao Anxin. Reference and realization framework for intelligent service type digitized campus construction [J]. China Education Information· Higher vocational education,2017, (7):69-71.
- [2] Hou Yan. Primary exploration on smart campus construction and application research based on cloud platform [J]. Technology Wind, 2018, (1):50-51.
- [3] Liu Yang, Yang Ying. Brief analysis on smart campus [J]. Chinese Consulting Engineers, 2015, (8):56-57.
- [4] Cha Guoqing. Research on university security service problem and countermeasure[J]. Management Observer, 2016, (10):76-78.
- [5] Zhao Xin. Resource integration and collaborative innovation initiates the new pattern of students ' party construction--Documentary of universities in Beijing and Nanjing commonly carrying out students' party building "Juli Engineering" [J].Beijing Education (advanced education version), 2017, (9):62-64.
- [6] Xu Yingqiao. Establishment of social practice system and mode of university students--Taking the sunshine practice club of Electrical Technology Institute as an example [J].New wisdom,2017,(11):55-59.
- [7] Wang Jianxing. Make great efforts to inherit the collaborative innovation--outstanding effect of logistics culture construction of Jiangnan University [J]. University logistics research, 2017, (3):1-2.