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Learning on the Smart Campus Information System

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ABSTRACT

Smart Campus is a combined campus situation of work, study and living based on the (IoT) Internet of Things such as WIFI, CCTV, Sensor and Internet. Digital transition is widespread among many sectors of society. University needs to build a modern and developed country to emerge innovative scholars, science and technology experts. ICT and IoT technology installations play a significant role in developing the human resources. The aim of this research is to emerge academics, promote them as international standard research-based universities and to promote the role of smart campus. A smart campus provides experiences using advanced network infrastructure and Internet connected devices and allows universities to make insight driven decisions to improve security and maximize resources. This research was done to help the emergence of a smart campus information system. This research paper was written in order to gain a lot of knowledge about the smart campus. It can make it easier to make a smart university.

Keywords - Smart Technology, Learning, Smart Campus, ICT, IOT, LMS, EMIS

1. INTRODUCTION

Similar developments in digital technologies are needed in universities, enabling students to choose international courses. Compared with the past, it also includes global change that has led to revolutionary changes. There are many other benefits, such as technology, that will enable you to open up good learning environments, global networks, and employment opportunities. Universities using the Internet for universities' Face-to-face meetings will also be essential in the future, and technical challenges will be faced as challenges. Just as it is easy to search for information, it is easy for students, teachers, researchers, and visitors to keep records based on their profile.

The Smart Campus takes providing the teachers and students with an intelligent and open education and teaching environment as well as a suitable and happy living environment. In addition, it consumes transformed the way teachers and students relate with university/campus resources and the environment, understanding the people concerned with modified service modernization.

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The IoT technology has a great impression on campus. IoT has not only transformed the traditional teaching performs but has also transported in the society of educational organizations.

The Smart education contracts with well knowledge in a digital age. The smart campus combines smart devices and existing program systems to use the application layer to gain access to a smart campus information system. A variety of terminal access knowledges, including mobile application, Web based, PCs, Smart terminals, personalized service devices, and wearable devices, provide continuous support to consumers. For specific application scenarios based on different environments, the format of personal human computer interaction, enhancing campus information, and campus information enhanced service experience.

Smart Campus Using Android constructed Smart Phone, the knowledge of creating a "Smart field" indicates that the founding can implement advanced ICT (Information Communication Technologies) to automatically monitor and accomplish each capability on campus. The Smart campus contains portal architecture, management service, smart classroom, smart library, smart canteen, infrastructure, etc. The Smart campus system mixes hardware device of digital university, and cloud storage as the means of data storing to improve smart communication in a university.

In the smart campus sector, the learning process is conducted through the e-learning system, which is in learning from anywhere for students, internet connectivity and time Video conference buildings and e-learning equipment make it possible for students to confront the teacher from various locations. Learning can also be replicated for students to solve the problem, and a viral course can be used for practical lessons. A smart campus provides experience using high-level network infrastructure and Internet-connected tools. It is collaborating with tools and programs to bring universities to improve security and maximize resources.

The context of this paper is structured as follows. Section 2 reviews related work on the Smart Campus concept in the University. Section 3 proposes a framework of Smart Campus. Section 4 presents the design layers for Smart Campus System case study at University of Computer Studies, Hinthada, Myanmar. Section 5 presents conclusions and further work of this research paper.

2. LITERATURE VIEW

Smart Campus is to routine the Internet of Things, data mixture, cloud computing, data warehousing, data mining and other information technologies, to combine the independent commercial systems and resources of universities, colleges into an organic whole with highly cooperated skill, perception as well as service ability to support university development.[1] The present Smart Campus is the elevation of digital campus, which can offer a better lifecycle and academic environment to the university teachers and students. Smart Campus is an innovative form of the university informationization, also a further range and development of digital campus. [2, 14-16]

A similar layered model and highlight the importance of extensible planning for easy adding of new data sources. The design is based on three pillars, which are IoT network of mobile and fixed sensors for data gathering, ubiquitous computing to enable computing anytime everywhere and crowdsourcing (crowdsensing) model, where the operators act also as data creators with their mobiles.[3]

A Smart campus is a subsection of smart city surrounded with sensors and intelligent materials on the ideas of cloud, Internet of things technology and associated technologies combination. The awareness is for administrators, teachers, and students through a more sophisticated setting smartly join to enhance learning, share skills and effectively communicate [4,5].

Technology has transformed the expression of education and it has fashioned more educational chances. A Smart Campus uses technology to brand the life of a student and the university management easier, both teachers and students have profited from several educational technologies. Smart Campus supports in the application of three vital areas of university life: the experience, efficiency, and education.

Increasing interconnectivity of technology outcomes will continue this tendency by encouraging students to do more with their time. It will also redesign how students interact with a university by providing an associated student experience. A Smart Campus can consequence in digital transformation that will address the future of learning and effort. By the benefits of a smart campus, universities can simply modernize while remaining sustainable and related to their students, staff, and faculty.[10]

The use of smart technology instead of university can bring many benefits. Smart applications extend campus management to students and teachers and appropriate service functions, management decision, smart security Smart campus facilities are given an opportunity to learn and support smart campus buildings for ray decision, smart security, and smooth campus functions. Creating a smart learning environment requires understanding the characteristics of such an environment, combining regular and informal

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learning and taking into account learner perceptions and learning behaviors. Exploring more efficient learning techniques, tools and design locations for personal and personal learning.

3. A FRAMEWROK OF SMART CAMPUS SYSTEM

A smart campus system is the integration of the (EMIS) Education Management Information System, Student Learning Management System (SLMS), E-Library System, E- Learning System by using the internet technologies. The framework of the smart campus system is shown in the following figure. According to the following figure 1, the right hand side of the figure such as CCTV, Sensor, Internet and WIFI, etc..) are supporting a smart campus.

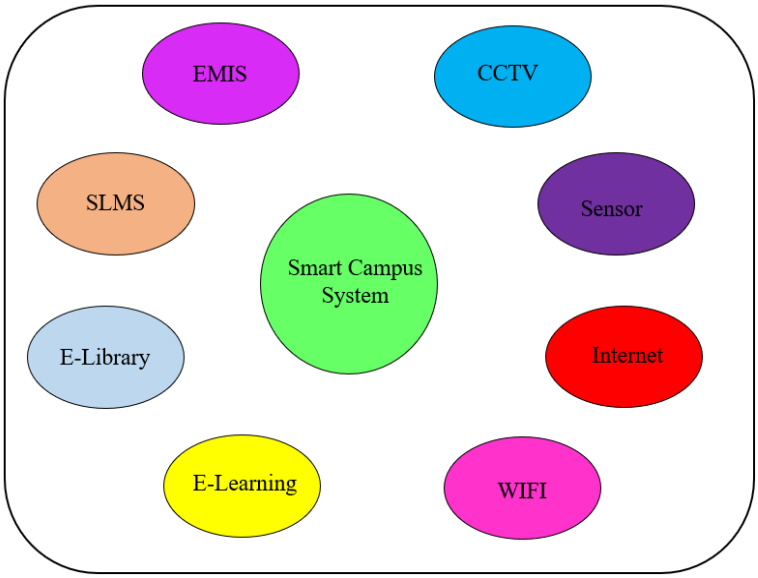

Figure 1 . Framework of Smart Campus System

Education Management Information System (EMIS)

An EMIS can be described as a system to provide decision-making, policy analysis and modelling and planning for collection, integration, management, maintenance of data and information and dissemination of information, monitoring and management at all levels of an education system (staffs, teachers, researchers, etc). EMIS can deliver administrators and teachers with the information required for knowledgeable planning, policy-making, and estimation. MIS have changed school management in the parts of leadership, decision making, capability, human resource management, statement, responsibility, and planning.

Student Learning Management System (SLMS)

A Student learning management system is a software platform for educators to manage courses online, which allows them to provide students a single location for all course content. This is basically contained of a document management section and a communication part. The key features of the SLMS are shown in the following: [6]

- A streamlined and customizable dashboard that monitors program completion and students' progress through predictive analytics
- Simultaneous course development, fast data backup and management, contact management, activity monitoring, and a built-in calendar
- Allows online courses, management of online tests and exams, quizzes, interaction, collaboration and efficient handling of grades and cooperation through forums and wikis
- Collaborative resources and tactics, complete writing and logs, fast notification, warnings with reliable security updates
- A flexible plan and design, can implant external resources, and the aptitude to achieve user's responsibilities and permission
- It comes with multi-lingual functionalities, interactive program integration, development of monitoring topographies, consequences and standards
- Allows the usage of a messaging feature to response questions and rapidity the overall communication within an organization
- Options for personality and peer valuation, secure screening procedure and options for mass registration
- Consumes Android and iOS mobile applications
- It can be combined with Google Application, Microsoft Office 365, Next Cloud, and more

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- Can be held on an external or the proprietor's server
- Plugins for a variety of topics and collaborative activities
- Support for multitasking, progress investigations and various methods of reporting, and support for good language support
- Offers optional hosting via Moodle Cloud

Electronic Library (E-Library)

An electronic library has not only text information but also audio, graphics, and activity video in the form of digital data. Because all are digitally engineered, a variety of factors can be easily integrated, with high recall and other functionality rates. Build a virtual library on the network when electronic libraries like this appear in multiple places and connect to each other via network. It is a "world library" that crosses national limits irrespective of the distance between real electronic libraries.

In addition to providing the latest functions, the electronic library system allows the books to be displayed on the surface like printed books, making progress in retrieving books and documents. The system enables the user to display multiple books on the same surface, slipping one idea from a section described to a link that describes the same idea within another book. The user can also use dictionaries and theories so that the original text is translated into audio information, and that published texts can be checked simultaneously at different locations in the book.[7]

Electronic Learning (E-Learning)

With the help of electronic resources, teaching can be based in or out of classrooms, but using computers and the Internet is the centerpiece of e-learning. E-learning can also be defined as a network capable of transferring skills and knowledge to a large number of recipients of education at the same time or differently Earlier, the system was deemed to lack the necessary human capabilities, so it was not accepted at first.[8]

4. DESIGN LAYERS FOR SMART CAMPUS SYSTEM

Smart Campus is accessing data integration, wholesale computing, data mining and other information by using the Internet. The following figure 2 shows the design layers for smart campus system.

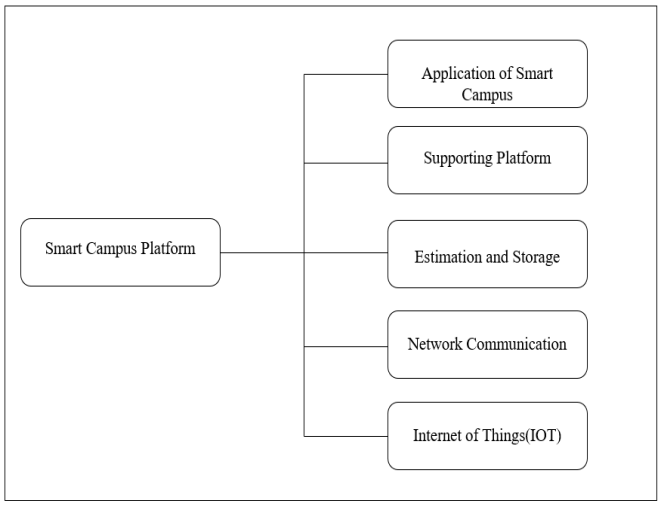

Figure 2. Design Layers for Smart Campus System

A. Application of Smart Campus

This layer contains various commercial applications on smart university information such as teaching, scientific research, management and services. They are key elements to the construction of Smart Campus. In the application of smart campus include teaching service, scientific research service, management service, living service, social service, cultural service, etc.

B. Supporting Platform

This platform link different portions of the campus and gather different information, which shapes a solid data foundation for Smart Campus. The supporting platform include data mining engine, big data analysis and processing, data service, etc.

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C. Estimation and Storage

This estimation and storage platform include database, data center, virtualization, storage, etc. Big data is the driving force for build data storage, analysis, and processing. A Smart campus is linked with different intelligent technologies and stations, information systems and sensing devices produce a large size of data. This innovative technology can gather such large data, store, analyze and process for intelligent applications and devices for smart infrastructures to support decision-making developments.

D. Network Communication

The network communication platform includes 3G/4G, WIFI, IPv4/ IPv6, Network, etc. This encompass of campus wired network, WIFI wireless network, 4G mobile network and other communication technology. The intelligent perception platform is burdened with accountability of collecting several types of environmental and motion data for teachers and students everywhere, the Internet delivers high coverage spread services for high-speed access services.

E. Internet of Things (IOT)

The Internet of Things (IoT) is an interconnected system of computer devices that provides animals, animals or humans with unique identification criteria the ability to transfer data over the network without the need for computer interaction with the machine and digital machines provided, objects, animals or humans and humans. [9] This platform includes CCTV, IP camera, Sensor, RFID, etc. IoT technology is playing an important role for academic progress at all levels including school, college and university course. From student to teacher, classroom to campus, everything can get benefited with this IoT based technology in education society. In figure 3 shows the internet of things enabled teaching in education sector.[11]

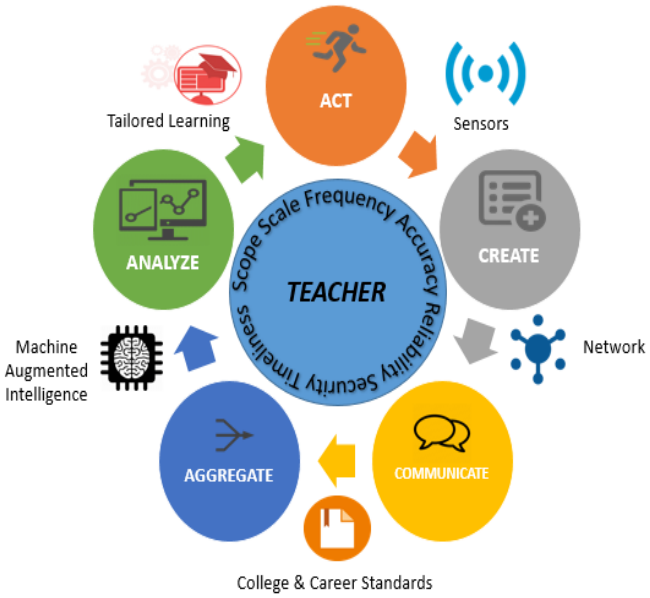

Figure 3. Internet of Things enabled Teaching [11]

IoT affects the educational sector directly and indirectly, mainly by reducing and upgrading the quality of education, which broadly affects the teaching and learning process. The valuation part of education needs the actual treatment and IoT is well suitable for the real implementation in this sector. Once the core areas such as schooling, knowledge, valuation are taken into attention, the major feature will be promoted. [12]

The resources available for knowledge on devices, like e-books, are more interactive and attractive. This research can learn the usefulness and applications of IoT and what is the effect of IoT technology in the field of education. The future work will be to find out how can apply IoT in higher education and challenges of IoT implementation in smart campus system that includes smart education development, smart parking and smart room. [13]

5. CONCLUSIONS

Building a smart university requires understanding structural analysis from the perspective of smart technologies. This becomes possible if elements of big data technology, the analysis is incorporated into decision-making within the limits of an intelligent

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environment. Smart devices, networking, smart programs, smart applications, and efficiency in building a smart campus Cloud computing technologies are also needed to produce information services and processing for the campus information system. Integrating these related technologies to design a smart campus to support the campus data system requires a lot of things, including human capabilities and learning environment, they tend to communicate with smart technologies to create a smart and informed environment for the effective communication and decision-making process. The benefits of a Smart Campus are several, and in addition to the operational competences, the three major types: Smart Living, Smart Learning, and Smart Safety & Security. All of which can support growth student appointment which is energetic to help students change to university life and aid them obtain all the properties they need to succeed.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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