SUSTAINABILITY CAMPUS FOR SMART CITY

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Topics Covered

- Overview of Smart Campus in Smart City
- How do I make my University a Smart Campus
- Pillars of Sustainable Smart Campus

What is a Smart City

- A city that **uses technology to provide services and solve city problems**. A smart city does things like improve transportation and accessibility, improve social services, promote sustainability, and give its citizens a voice.
- The **main goals** of a smart city are to improve policy efficiency, reduce waste and inconvenience, improve social and economic quality, and maximize social inclusion.

What is a Smart Campus

- is an emerging trend that allows educational institutions to combine smart technologies with physical infrastructure for improved services, decision making, campus sustainability
- It uses networked technologies to facilitate communication, enhance security, use resources more efficiently, and of course, save money. Simply put, a smart campus will improve the experience, efficiency, and education.
- Smart campus aims to improve the quality of life of its community by applying ICTs in a sustainable manner.

SMART CAMPUS

- The number of smart campuses may grow faster than smart cities, as Digital Native students expect online connectivity in their learning and social environments.
- The idea of digitalizing campuses is also favored by school officials continually searching for new ways to improve the experience for students academically and socially, along with mitigating security and environmental issues as well as reducing spiraling operating costs.

Example of Smart Campus Student Services

- Wayfinding
- smart parking/transit
- wait times for cafeteria food
- availability of fitness equipment
- finding their belongings.

The services are truly exciting for we see the Smart Campus as the intersection between Smart Homes (new experiences for Digital Natives entering higher education) and Smart Cities (new operational efficiencies to save money and improved public safety).

Benefits of Smart Campus

- Smart Living
- Smart Learning
- Smart Safety & Security

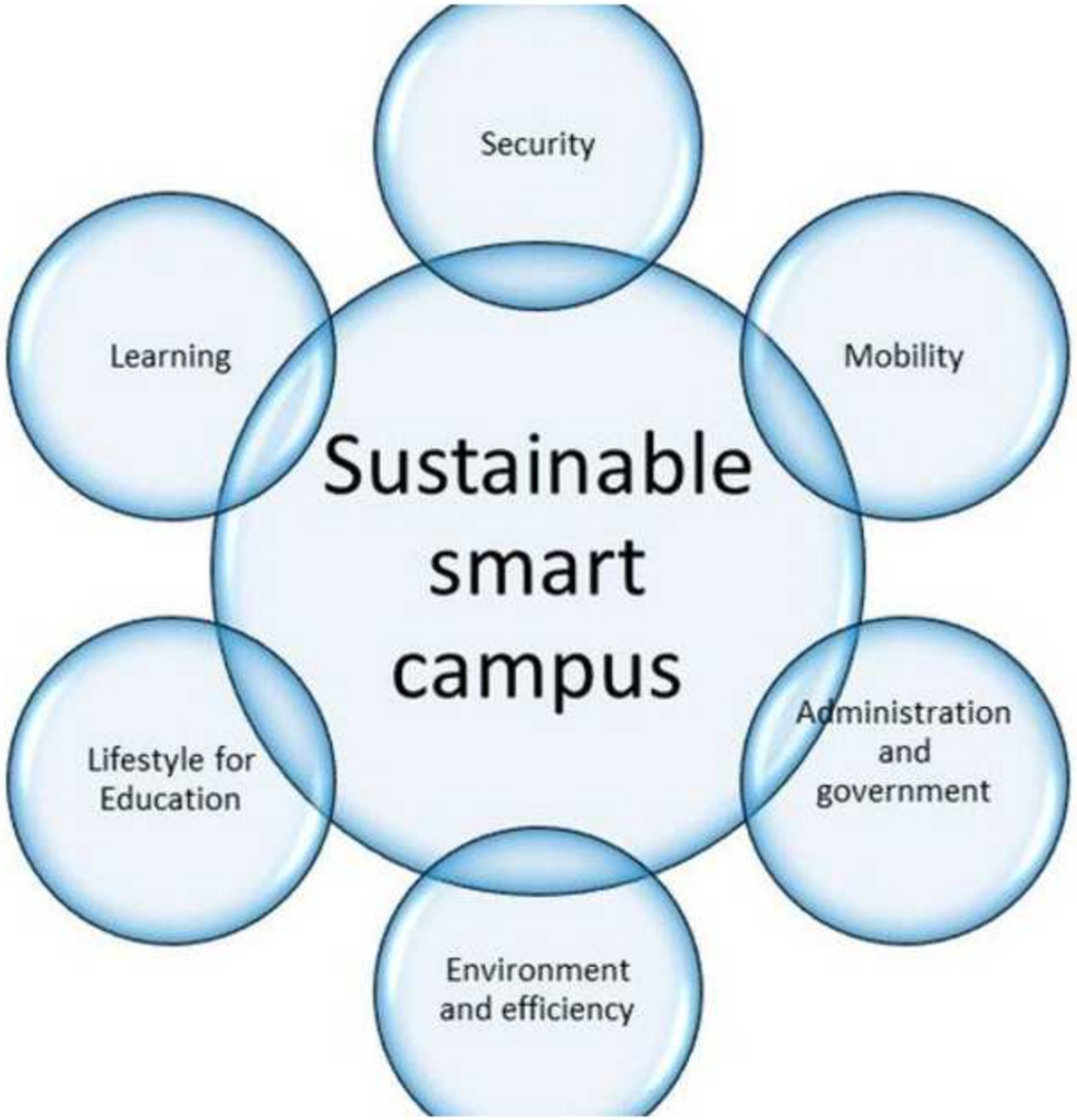
The three benefits increases student engagement which is vital to help students transition to university life and help them obtain all the resources they need to succeed.

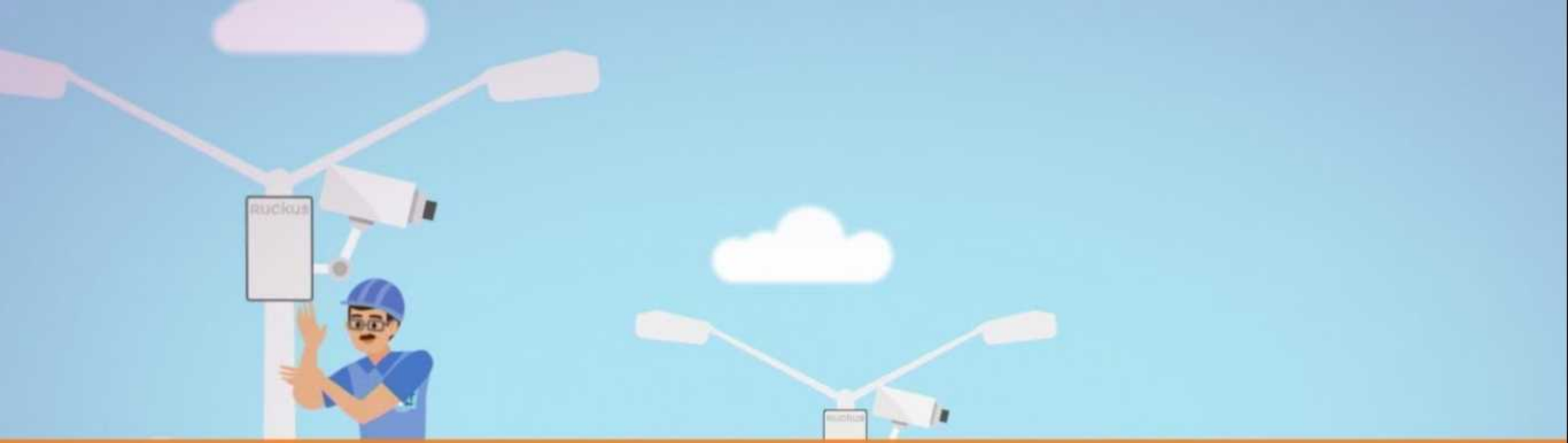
How do we make our university a smart campus?

- IT must examine their current networking infrastructure to see if it is in your campuses' capacity to handle a vast range of connected devices. According to Deloitte, the vision of a smart campus relies on a diverse stack of technology capabilities that should have the following layers: presentation/channels, analytics and automation, data platform, integration, enterprise applications, infrastructure, security and risk.
- Budget
- Administrative support
- In order to meet the demands of today's student bodies, universities must adopt smart campus technologies to remain competitive in the higher education landscape

- With the technology architecture in place, universities should focus on key principles that foster interconnectivity at a consumer-grade level:
  - **Intuitive**: today's students are digital natives that are used to intuitive platforms and gadgets. These students want to interact with a system that is intuitive and simple to use. By utilizing buyer personas and user journeys, a smart campus can make interaction effortless.
  - **Persona-centric**: video, voice, gesture, touch. All these interactions should be design thinking and persona-centric. For example, professors can use voice technology to enhance their lecture and send reminders to students
  - **Flexible**: technology is constantly changing and evolving because of that campuses need a technology stack that doesn't lock them down. A campus should look to a domain-driven design architecture based on microservices.
  - **Scalable:** traditionally, campuses are local in their reach and scale. Not with a tech enabled campus. A smart campus should allow for global scalability that leverages digital tools and technologies to provide data-driven experiences.

Pillars of a sustainable smart campus. Adapted from: Nam, T.; Pardo, T.A. Conceptualizing Smart City with Dimensions of Technology, People, and Institutions.





SECURITY

SMART CAMPUS

Integrated Systems as Part of IoT

- Access control systems
- Automation systems
- Security systems
- Automatic dispensing system

The way in which sensors interact with the environment and people contributes to creating a knowledge society.

Smart City
lar Street Lighting System

IoT applications are as follows

- outdoor lighting
- building lighting/heating/cooling/ power systems
- security surveillance and physical access systems
- Smart parking

IoT Data Acquisition

- The IoT allows information to be stored on the internet
- IOT Data Acquisition Device helps you make your machines smarter by gathering and analyzing real time data.

Cloud Computing and Centralization of Data

- is a general term for anything that involves delivering hosted services over the internet.
- A cloud can be private or public.
- A public cloud sells services to anyone on the internet. A private cloud is a proprietary network or a data center that supplies hosted services to a limited number of people, with certain access and permissions settings

Data Management and Analysis of Big Data

- The existing data sources in a smart campus directly influence data management. For this reason, it is important to use tools capable of performing a quality process in the extraction, transformation and loading of data considering adequate processing times.

By using data and analytics, Smart Campus can optimize the following:

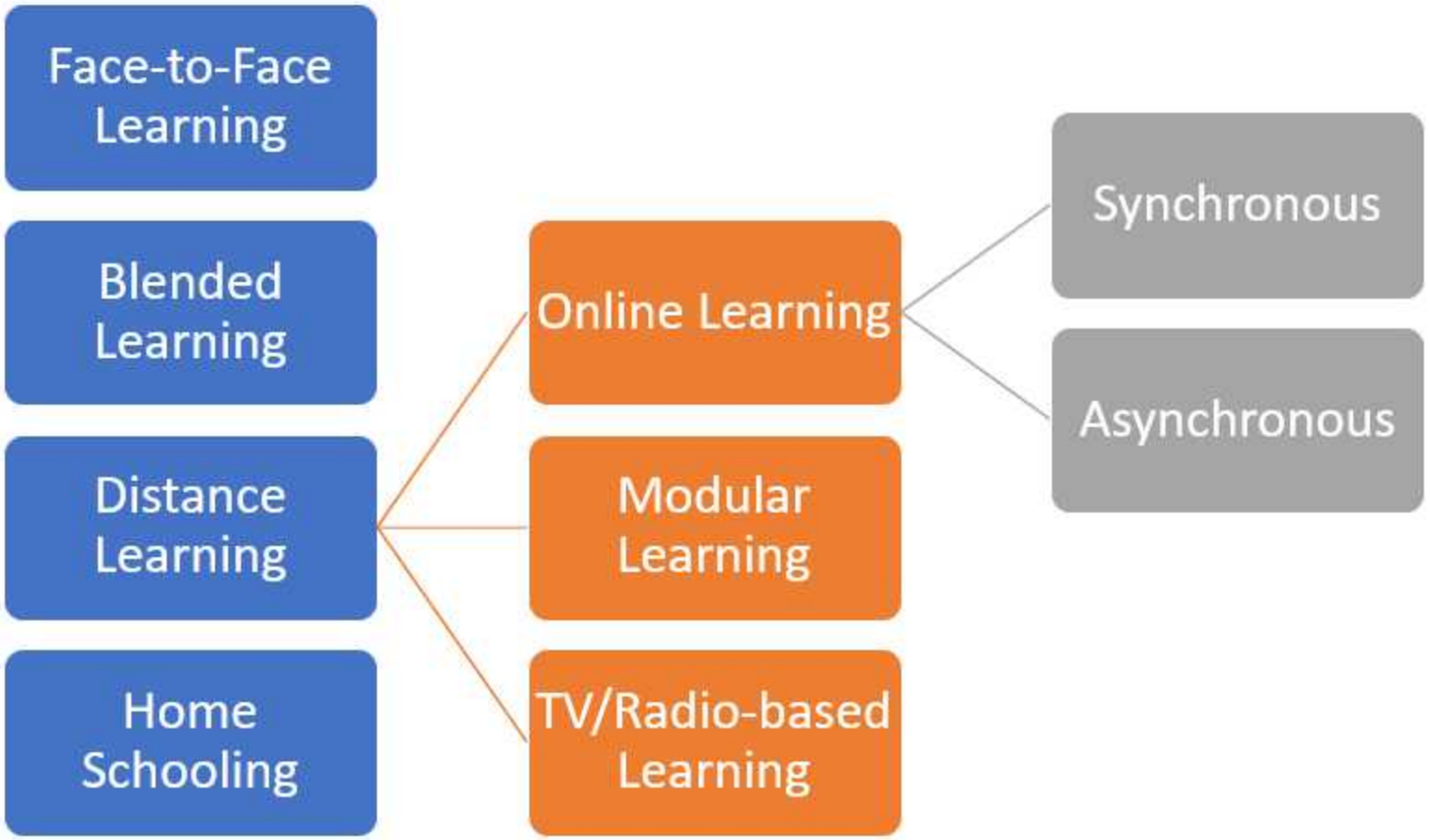
- Resource utilization
- Student experiences
- Facilities management
- Travel patterns
- Transportation schedules

BIG DATA MINING TOOLS

LEARNING

- Technology has lent a new dimension to the very way teaching-learning happens in school administration
- Smarter ways have evolved, making teaching-learning more intuitive, innovative, productive, motivating and interesting.
- Smart schooling technology not only facilitates holistic development of students through e-learning and other digital educational system but also help automating the day to day school activities and security of students besides ensuring seamless communication between school management, teachers and parents.

Learning Delivery Modalities



THE INVERSION

Flipped classroom

- is a **type of blended learning** where students are introduced to content at home and practice working through it at school. This is the reverse of the more common practice of introducing new content at school, then assigning homework and projects to completed by the students independently at home.

LEARNING MANAGEMENT SYSTEMS

Mindflash

Google Classroom

edmodo

CANVAS

schoology

Microsoft Teams

Video Conferencing software for Teaching and Learning in the New Normal

- GoToMeeting
- RingCentral Video
- Microsoft Teams
- Google Meet
- Zoom Meetings
- Click Meeting
- U Meeting
- BigBlueBotton
- Bluejeans Meetings
- Lifesize

SUSTAINABLE SMART CAMPUS AS A LIVING LAB Launch video

- https://www.youtube.com/watch?v=ZjYmU2Yufww

Conclusion

Smart Campus improves the quality of life of their students, faculty and staff by using information and communication technologies.

In order to meet the demands of today's student bodies, universities must adopt smart campus technologies to remain competitive in the higher education landscape

Continuous upskilling of faculty members to keep abreast with the changing innovations, challenges in the new normal landscape of education.

Administrative support is also a must for a sustainable smart campus.

Monitoring and Maintaining of ICT resources is much a need for a smart campus.

Thank You