Cassia Networks Smart Campus: Guihua school, education goals

Situation: Education is Changing and Digitizing Globally

The modernization of education worldwide is proceeding with the assist of technology. The numbers of people in schools is growing, at the same time "individualized learning" is growing. Moreover, engagement with students, parents and the community have taken on a "digital" context – real-time, data-driven, and 24/7.

For example, in early 2016, the Chinese General Office of the Ministry of Education issued the "Key Points of Education Information in 2016" report describing national efforts to rapidly develop a modern world-class education information system in line with education goals. By July 2016, the Chinese Ministry of Education was encouraging the creation of **smart campuses** nationwide to reach those goals.

Obstacles: Cost, power requirements, standardization, and management

The first job of a smart campus system is to deliver on education goals, or outcomes. The system is "outcome-based" and, in its basic description, involves end-devices (e.g. smart bracelets, sensors…), connectivity (e.g. gateways, routers), and applications to manage the data (e.g. for the system itself, and the education goals). Moreover, addressing outcome requirements while balancing budgets, power requirements, and technical capabilities is a challenge.

In turn, schools globally are turning to the Bluetooth standard, which includes the following benefits: it is a trusted global protocol, end-devices like sensors are low cost, and power requirements are low. However, traditional Bluetooth is too short-range, a one-to-one connectivity, and lacks robust Internet protocol connectivity, hampering its use in smart campus development.

Action: Long-range Bluetooth, one-to-many, remote management

Cassia Networks patented long-range Bluetooth gateways with one-to-many capabilities and remote management layer (Cassia's IoT Access Controller) are the staging ground for enterprise-grade Bluetooth smart campus solutions. For example, Cassia's Beijing Guihua Network Smart Campus Overall Solution is now one of the largest Bluetooth-enabled smart campus education solutions in the world.

The Guihua Smart Campus project reflects two primary outcomes of the modernization effort:
1. a.) Students with different subjects in separate classrooms (aka "shift system") in the junior high and high schools, and
   b.) **student attendance** in classrooms using a smart bracelet.
2. a.) Promote student **health habits** and improve the physical fitness of students.
   b.) Assess student physical fitness and popularize football as a healthy student habit**.**

Results: Attendance and classroom management

In the new shift system, students have different subjects in different classrooms as part of an "open" environment, which helps the students and school reach higher levels of education.

In turn, a shift system can also increase potential student attendance issues, if not managed. For example, students may go to the wrong classroom, neglect to attend to assignments, or go absent between classes. Also, teachers may not accurately track students' subject interests, or effectively manage a student's class-by-class attendance.

The smart bracelet-based smart campus system, student attendance is automatically recorded for each class room. Teachers focus on the lesson plan more. Less time is spent on the administration of attendance and related issues. As a result, students receive more teaching time in the classroom.

Results: Attendance and school management of student entry and exits

Cassia long-range Bluetooth includes indoor and outdoor connectivity, ensuring the automated management of student attendance entering and leaving school. The student Bluetooth smart bracelets accurately record the time when students enter and leave a school, or a school gate. The management platform automatically records late arrivals, or early departures. It also automatically informs school administrators in real-time, so they may check on school entrances or exists at a non-designated time.

Results: Student health and real-time data analysis

Collected by Cassia gateways, the data sent by the students' smart bracelet tracks students' heart rate, number of steps, calorie consumption and other data in real-time. The school may decide to use the information for physical education improvements on an as-needed basis or for ongoing baseline assessments of student physical health habits.

The data is uploaded to the management platform and pushed to a front-end display page in real time. In turn, a teacher or a student's parents can understand the student's individualized effort levels in real time.

Results: Augmenting student learning with analysis

Based the school goals and education programs, the system can be fine-tuned to gather data to create an integrated profile for a student, such as: students' basic information, consumption information, behavioral preferences and activity preferences, reading preferences, daily routines and other information. Based on individual and groups data-set profiles, programs may be designed to align with educational and teacher/student/parent goals.

In other words, the information is used to create personalized training guidance in conjunction with education management for the school.

Results: Communication with Bluetooth messaging

More than a one-way data system, the Cassia smart campus system includes a Bluetooth short-message-service (SMS) function. SMS allows teachers (and/or parents) to send messages to student smart bracelets for a variety of communications, such as: safety and security issues, coordinating pick-up and drop-off, health measures, general announcements etc…The system administrator specifies the rules and time-periods for the bracelet to receive messages.

Results: Intelligent student housing management

For students in on-campus housing (e.g. dormitory), the smart campus system manages on-campus housing issues. Housing safety and management has several options to choose from, including: managing room occupancy, confirming attendance during "secure" hours, and has room for more.

Moreover, the system may serve to assess the health status of students with health issues, and alert student caretakers if safety or security issues arise. Finally, summary statistics form the basis for intelligent data-driven, on-campus housing occupancy and space planning decisions.

Summary: Cassia Networks Bluetooth smart campus system

As noted, education is modernizing along digital lines. Government initiatives and parent demands for higher education results are driving ambitious goals.

The inherent advantages of Bluetooth – low-cost, global standardization, and low-power requirements - make Bluetooth an excellent fit for smart campus systems. Cassia Networks has developed Bluetooth capabilities involving long-range, one-to-many, and remote management to address previous constraints on Bluetooth in a campus setting. In partnership with Cassia Networks, the Guihua Smart Campus is delivering on educational goals and outcomes with results across a variety of areas – attendance, classroom and school management, student health, safety and security, housing management, and communication.

Cassia Networks looks forward to learning more about your team's education goals and working to create the intelligent smart campus best suited to meet and exceed your communities' expectations.