A new campus at the United Arab Emirates University (UAEU) is headed towards a "paperless" and "inkless" teaching environment with the faculty having the ability of conducting lectures using all the resources available on the UAEU Cloud without them having to bring presentation laptops or other such devices into the classroom. AV and IT integration was handled by Visionaire, which was guided by the strong environmental principles the university upholds.

Campus in the cloud

The United Arab Emirates University (UAEU) was established in 1976 and is credited with being the first comprehensive national university in the UAE. A new campus has recently been built at Al Ain, the second largest city in the Emirate of Abu Dhabi.

"The new integrated campus is meant to house approximately 20,000 students and faculty and Visionaire handled the IT and AV requirements managed by a UAEU appointed committee; from design and build to maintenance of technology," explains Falguni Jesrani, Chief Program Manager at Visionaire. "So that's infrastructure, networks, data centre, campus wide audio-visual and the application of learning technology. The campus is moving completely to using digital data."

ICT and intelligent building specialist, Visionaire was awarded the more than $45 million contract covering AV and IT integration. Integrated ICT, which is a mix of AV and IT, is where Jesrani believes Visionaire has its strongest advantage. "Customers want a single vendor to take on all the technology integration responsibility to ensure seamless integration and the ability to deliver functional benefits from technology and not just individual boxes or technology siloes. Visionaire has been pioneering in the field of technology integration for more than 15 years and provides leading edge and best-of-breed AV and IT

Aerial view of the UAEU Al Ain Campus

> ❝ *The collaborative next generation unified network backbone is completely intelligent so all the connected passive ports are monitored and can be managed centrally.* ❞
> *- Falguni Jesrani, Visionaire*

integration with highly talented and skilled teams and the combined experience of having integrated more than 4000 venues. In the last five years we have created a business model that leverages the power of the unified network and unified communications. So with our experience in AV and our expertise in IT we believe that we have a cohesive value proposition for our customers", says Aneeta Gupta, President & CEO of Visionaire.

The Al Ain campus is comprised of more than 55 buildings across an area that covers 120 hectares and approximately 290,000m² of teaching, recreational and residential facilities. The campus' network incorporates more than 350 wiring closets, which connect to more than 25,0000 IP ports connected to the UAEU data centre via redundant fibre.

The UAEU-SkyNet wireless network consists of more than 2,500 wireless access points to provide full coverage over the whole

campus. The ICT network design is based on full layer three routing from the core to access which provides more performance than the traditional design of having layer three between core and distribution.

Visionaire believes that the design of the IT network is important as the next generation network is required to support large bandwidth packets from AV applications such as thin devices, resource management portals, IPTV solutions, digital signage, central reservations and control, lecture capture, HD videoconfencing and telepresence. "With emerging AVB standards the dependence on the network will become more pervasive for the full spectrum of ICT which will also include PoE delivery to connected AV and IT devices," adds Gupta.

The UAEU data centre is located at the geographic centre of the new campus in the Faculty of IT (FIT) Building. The FIT building hosts 20 advanced ICT laboratories and includes an 8.3 T-Flop super grid computer.

First and second phases of the campus development include 134 shared laboratories, 84 computer labs, 259 classrooms, 42 lecture rooms, 22 meeting spaces, a library and an administrative building. Furthermore there are auditoriums, cafes, dining rooms, recreation areas, a gymnasium and sports facilities as well as an Olympic size swimming pool that uses electronic sensors and timers to automatically display lap times on a Daktronics LED display system.
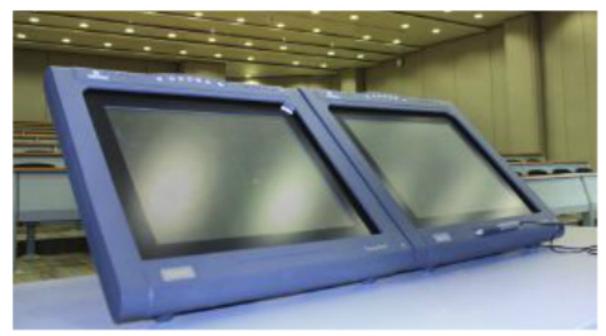
The university requires that ubiquity of information be increased to bolster access to research, academic and administrative resources on the Maqam campus. It wants to improve productivity of learning and research offerings with an open standards, orchestrated, high-quality converged voice, video and data communications system. >

Clockwise from top left: Lecture theatre hall in FIT building with Mitsubishi rear projection; centralised room scheduling is managed by Arrive InfoPoint touch-screens; Dual interactive podium touchscreens

This utilises and leverages the benefits of various web, AV and data technologies into what the university describes as a "Collaborative Next Generation Experience" with customisation to the work practices and organisational culture of the UAE graduate research institution.

The UAEU wanted to enhance communications for on-campus and long-distance interactions. The new platform is designed to allow the faculty, researchers and students to utilise integrated and customised open systems software, hardware and services.

Visionaire was given five months to procure, deliver, install, test and commission the wired and wireless network, classroom AV, lecture and meeting room AV and the recreation spaces. This included full wired and wireless network, equipment cabinets, data centres, unified communications and network security as well as 477 Smart Interactive Whiteboards with integrated projectors, swimming pool, gym and basket ball court LED displays, scoreboards, audio and display installations.

It also included 42 lecture rooms with dual edge-blended front and rear projection from Mitsubishi and Christie with custom sized wide screens from Dalite. Rooms also incorporate Tandberg HD videoconferencing and 477 Arrive SoundPoint in-room sound field systems with ceiling array microphones, ceiling speakers and audio control units.

Additional areas include telepresence rooms, an educational court room and a virtual reality and holographic projection theatre that utilises a Musion system. Crestron control is joined by Biamp Nexia and Audia audio integration.

Teaching spaces are all connected to the UAEU on-premise cloud delivery of centralised applications including MS Office and Adobe Apps. The Arrive RoomPoint integration appliance has an inbuilt 2 x VGA, 2 x DVI-HDMI and 2 x USB auto switch which allows the faculty

> **UAEU's planned focus on using green ICT as the key driver of its educational emphasis is paying off with the new and 'green ICT' campus.**
> *- Dr Abdullah Al-Khanbashi, UAEU*

to connect external laptops and AV devices to the system with automatic source switching.

Given the massive size of the campus and propensity of classrooms, lecture rooms, meeting rooms and shared laboratory buildings, timetable management is an arduous task and requires students and faculty to move between different locations rapidly to meet the high level of space utilization on campus. Khadamat, a subsidiary of Mubadala Development Company (and co- managed by Serco), manages all the facilities at UAEU which includes managing the time-table. UAEU has once again used an innovative medium for time-tabling. The Arrive InfoPoint Resource Schedule Management system ties directly with Serco's Timetable software and UAEU's Banner system to accurately publish an entire semester timetable to touch screen interactive displays mounted outside classroom doors. From outside the door, students and faculty are able to see the schedule for each classroom and interact with it. More than 1,500 application using devices are simultaneously connected to the Arrive CloudPoint Server with full database integrity for large deployment on a WAN, providing central control and system via status visibility.

Voice reinforcement is continually provided in teaching environments. Ceiling mounted Arrive VoicePoint array microphones, which connect to Arrive SoundPoint mixers and audio amplifiers, pick up the instructor's voice. Audio is played out via ceiling speakers that are integrated into the Arrive GreenSuite SoundField solution. This removes the need for battery-powered neck-hanging or body clip-on microphones in other than large venues.

The set up is designed for teachers to be able to speak comfortably in the classrooms without straining themselves and the students at the back can easily hear their voices.

Standardisation of user interfaces was important for the UAEU and each teaching venue is equipped with a 10" touch screen that shows the university timetable and provides information on the room calendar.

The display also provides access to various UAEU portals, allows UAEU to collect anonymous feedback to surveys and acts as a communication broadcast interface for UAEU to provide information to students. Furthermore, teachers do not need to bring a laptop into the classroom and instead can access software applications via the touchscreen. Visionaire has integrated a Citrix virtual desktop solution to provide thin client and resource management and the Arrive CloudPoint provides the unified interface to standardized campus wide content delivery.

Equipment in classrooms is standardised with each space providing dual interactive SmartBoard whiteboards with short throw projectors or a table mounted interactive podium device. This displays the UAEU interactive resource management portal, providing faculty a uniform experience in the various types of teaching venues. Electronic mountings, racks, loads of external cabling and >

Clockwise from top left: Olympic size swimming pool scoreboard and integrated Daktronics LED video-screen; typical large classroom with dual edge blended Mitsubishi projectors firing on to Dalite screen; The UAEU Green Data Centre supports integrated IT and AV functions

discrete rack mount devices were all integrated into a single device, the Arrive RoomPoint an integrated Media Processor Appliance (rack-in-a-box), which works as the room PC, DC power adapter, AV switcher, lecture capture and content delivery platform for connections of external laptops and USB sticks.

The Great Hall, basketball court and swimming pool all provided Visionaire with tough acoustical challenges. The large spaces were not designed with acoustics in mind and coffered ceilings posed technical challenges and audio distortion. The integrator chose to use EASE data, beam forming and Tannoy's QFlex Beam Engine to overcome the challenges. The pool utilises distributed installations for speech and program audio reinforcement using SoundSphere speakers.

Digital signage and a bespoke Wayfinder solution bolsters communication and aids navigation. Visionaire used a combination of Cayin, Arrive InfoPoint and ArriveTouchPoint to construct the signage network.

"We are most thankful for the direction and encouragement provided by His Excellency Sheikh Nahayan Mabarak Al Nahayan, Minister of Higher Education and Scientific Research of the UAE, in setting the goal of creating an example for students and our nation's people and in meeting our social mandate as environmentally responsible citizens of the UAE and this world", said Dr. Abdullah Al-Khanbashi, Vice Chancellor of UAEU and the primary stakeholder of the UAEU Green ICT Vision. "UAEU's planned focus on using green ICT as the key driver of its educational emphasis is paying off with the "green ICT" campus providing faculty and students high performance access to UAEU IT and Audio-Visual services, the Internet and Ankabut (Internet 2) ", he added.

"The commencement of the new campus for UAEU students marks a giant leap in our mission to establishing the UAEU as part of the global research community," said Dr Wyatt R. Hume, provost chief academic officer and chief operations officer of the UAEU. He added that the country

would be proud of the investment, which will help create a successful future for the UAE.

"We have a service desk of more than 20 staff on site at the university. They answer day-to-day calls and handle maintenance and failure prevention."

Visionaire also managed training for the teaching staff at the university. "The level of retention for everybody is not the same so we believe in tailoring the training accordingly," notes Jesrani. UAEU has commenced a structured Professional Development Program with a formal certification for faculty staff who seek the training and pass the certification testing.

"We are privileged to be part of the on-going integration in technology in the UAEU. The focus of UAEU's key stake holders in formal certifications and faculty and staff professional development is commendable. We see a high level of interest for certified educational technology training in the region," says Aneeta Gupta, President & CEO of Visionaire. ●