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Case Studies

University of East Anglia

New Science Building

Norwich, United Kingdom

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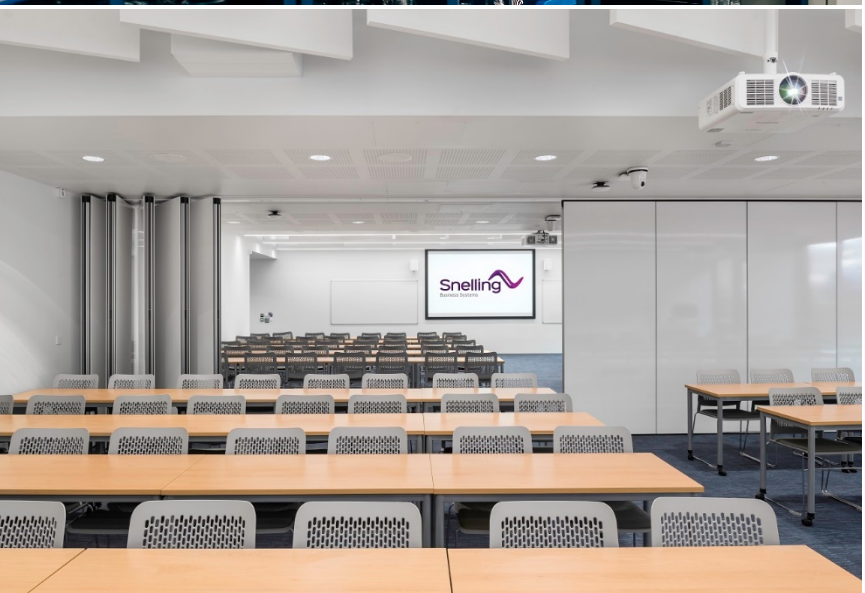
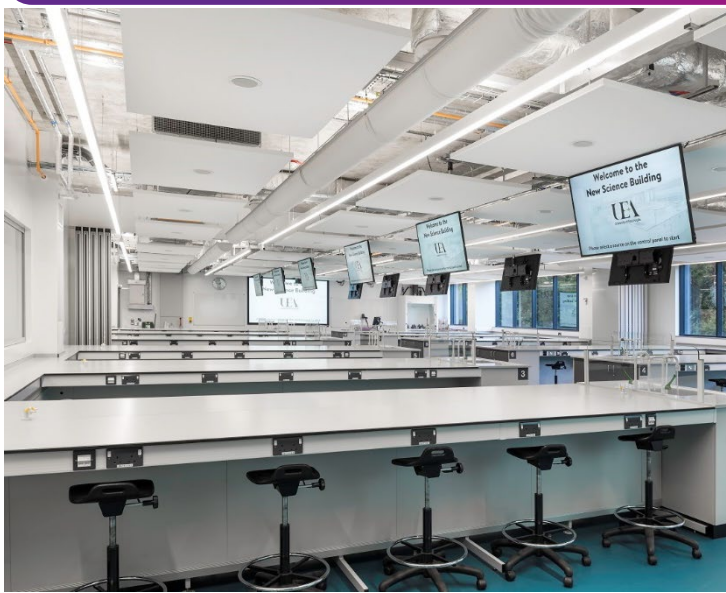
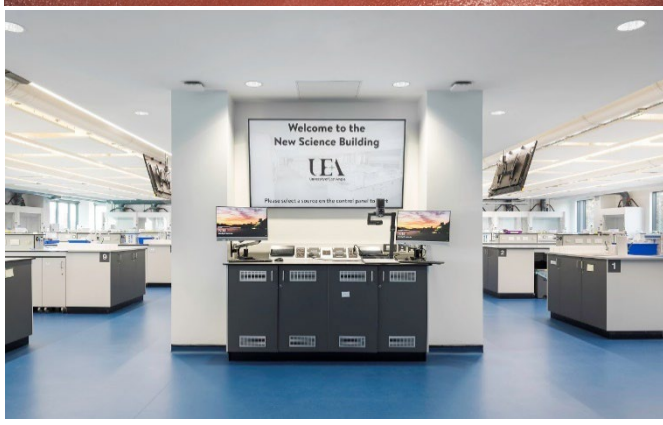
Designed for ‘interchangeability’

How can Audio Visual engineering support STEM teaching with a vision to encourage “cross-pollination of ideas”?

#SwitchOnthepossibilities.







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> The idea is that they are interchangeable. You can have mixed faculties and swap around between subjects.

- **Neil Wilson,** Senior Estates Project Manager

"We don't have separate biology and chemistry labs".

"A place for students from a variety of subjects to mix"

"Foster a spirit of discovery"

"Community of science students"

"Cross-pollination of ideas".

Atrium LED Wall 1.58 mm pitch, 3m x 2m

EXECUTIVE SUMMARY

The New Science Building at the University of East Anglia (UEA) is a £30 million inter-disciplinary teaching and learning facility developed for the sciences, including Environmental Sciences, Computing, Biology, Physics, Engineering and Chemistry and Pharmacy.

Interestingly, the building was developed with an idea to encourage "cross-pollination of ideas" i.e. to provide spaces that promote closer interaction and encourage inter-disciplinary collaboration between students.

"**We don't have separate biology and chemistry labs**"

AV infrastructure, therefore, was designed and developed for the purpose of accommodating larger student groups, support concurrent split-use of laboratories, divisible classrooms, common public spaces and avenues for students across the disciplines to interact, share and collaborate with each other.

For example, laboratory spaces can function as one large space to accommodate larger groups comprised of students from across disciplines. For smaller groups, the teacher base location allows multiple options on the touch control panel to switch between the pre-programmed 'classroom modes'.

Teaching spaces include classrooms, seminar spaces, laboratories, public areas, cafeteria, digital signage and LED installations. The deployment is UK's largest ZeeVee ZyperUHD AVoIP deployment in higher education and the UK's first for integration with Extron.

STEM Teaching and Learning. Unsiloed.

Multi-level Science Building

a new integrated teaching & laboratory building. General teaching spaces on the ground floor and inter-disciplinary teaching and research laboratories on the upper floors, linked by an atrium designed for creative interaction & social learning.

Emphasis on ‘inter’-disciplinary

Locating the general teaching spaces in the same building as the labs encourages a variety of departments to use the building, helping to break down barriers between departments and encourage cross fertilisation of ideas between students, researchers & academics, reflecting the original ethos of UEA.

UK’s largest.

The deployment is UK’s largest ZeeVee ZyperUHD AVoIP deployment in higher education and the UK’s first for integration with Extron.

Multiplicity

The AV infrastructure is equipped to effortlessly support multiplicity of scientific teaching and learning – from inter-disciplinary laboratories to classrooms, seminar spaces, conferencing facilities and more.

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Centrally Managed Teaching Spaces

Six Type C classrooms – small user groups

Since 2012, Snelling Business Systems have partnered with UEA on campus-wide standardisation programmes for AV deployment.

- Single-screen Panasonic projection supported by QSC speakers for audio content playback.

- Mid-sized teaching spaces are supported by room-specific **Shure MXW** wireless microphones and voice reinforcement for larger groups.

- Height-adjustable lectern with:
  - Touch-screen All-In-One PC
  - Extron touch control panel and lecture capture hardware
  - Wolfvision visualizer/Document Camera
  - VGA/HDMI and USB connectivity for user devices
  - Mersive Solstice Pod Wireless presentation/collaboration from tutor / student devices.
  - QSC ceiling speakers
  - Ampetronic Hearing Loop
  - Panasonic PTZ cameras

Type D classrooms – mid-sized groups

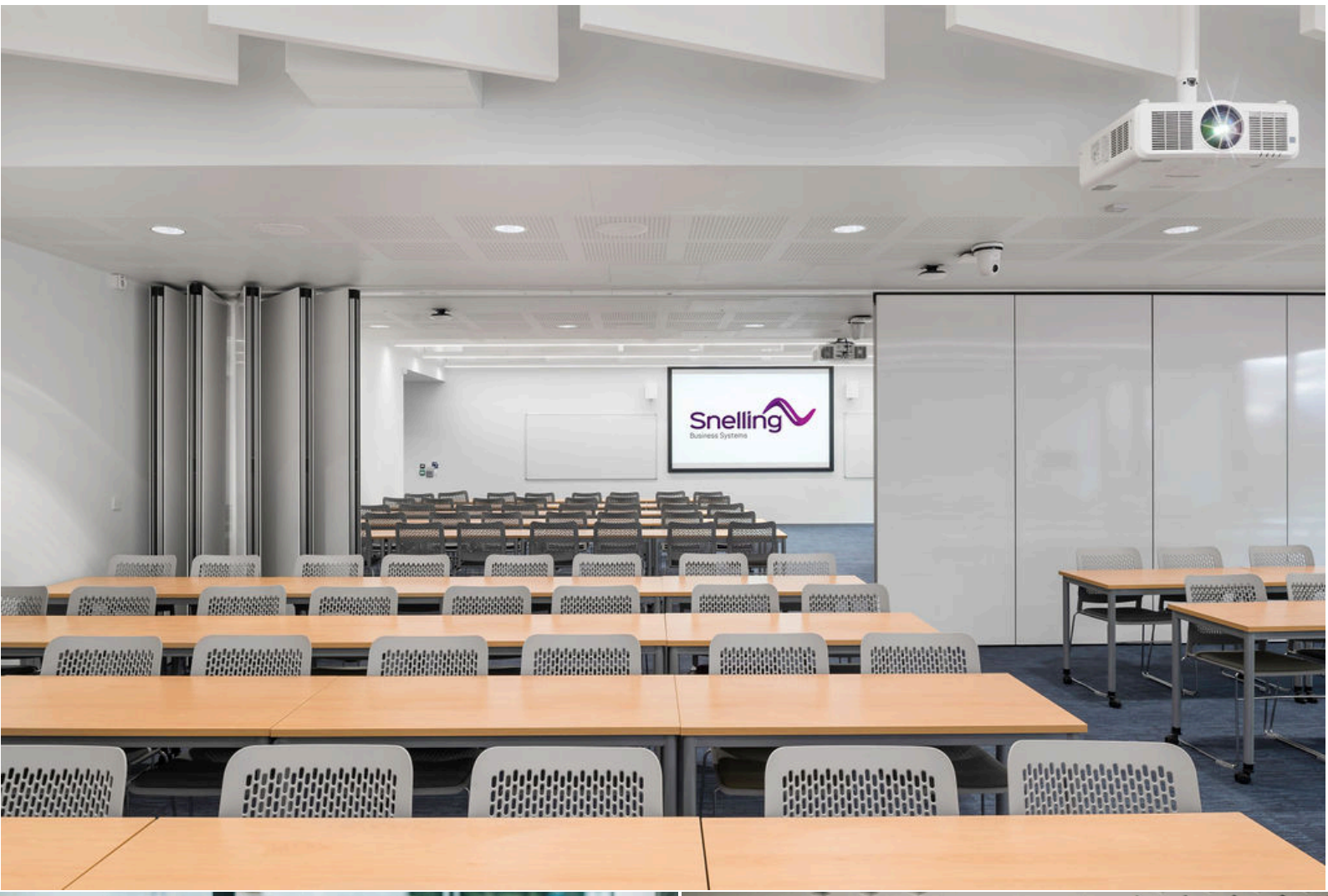
Specifications identical to Type C classrooms, larger student groups are supported by Shure MXW wireless microphones, QSC speakers and voice reinforcement.

Divisible Classrooms – large groups

Specified to Type D classrooms, the rooms can either be operated individually or as one large seminar space (central partition). In this setting, the user can select the pre-programed setting from either touch control panel to 'join' the rooms which will enable:

- Audio amplification (microphones and content) through both rooms from either lectern position.
- Audio (microphones and audio content) through the induction loop.

Provision also exists for height-adjustable, trolley-mounted (Teammate Varilite) Panasonic 75" presentation displays to be connected at the divider location during single-use of the space.


Snelling
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12:18
Saturday 28 September


Panasonic


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Two BIO Labs

BIO Lab 1 and BIO Lab 2 are Identical, multi-mode laboratories with AV infrastructure to accommodate a combined group of students from multiple disciplines.

- ✓ **Single-use ('Join' Mode)** - The lab is used as a single teaching space.

  The user can select the teaching mode from the control panel at one of either teacher-base location in the lab. Presentation content can be displayed across all screens in the lab with audio (microphones and audio content) delivered throughout the entire lab, as well as through the induction loop.

- ✓ **Split-Use ('Split' Mode)** – partitions can be deployed to split each lab into two teaching zones for the delivery of two concurrent teaching sessions.

  The AV system delivers two independent streams of presentation content from each teacher-base location to the associated display screens in the sectioned zone, as well as splitting the voice reinforcement and audio playback into these two zones.

- ✓ **Multi-Lab Join ('Multi-Lab' Mode) –** full use of both BIO Lab 1 and BIO Lab 2

  Audio and presentation content delivered to both labs simultaneously, as well as externally to other labs across the building, if required. For security, external broadcasts settings are restricted (and password-protected) to select users with IT clearance to prevent accidental override of other teaching sessions.

Each student bench consists of workstations and localised matrices as follows:

- 12-student bench with 4 screens on extendable arms
- 8-student bench with 2 screens on extendable arms
- 2x HDMI inputs at each student position.
- Main matrix is located at each individual student desk (under-slung).

Each screen location is equipped with a local PC and HDMI input for BYOD provision. Display source selection is controlled via a small button control panel, located at the front of the relevant peninsula.

Teacher base functionality

- Touch-screen All-In-One PC
- **Magewell** Lecture capture (microphone and content capture)
- Voice reinforcement via **Shure** MXW wireless lapel microphone and two **Ampetronic** induction loops (for each section of the lab in 'split' mode).
- 12x **QSC** AcousticDesign Ceiling Speakers
- **Wolfvision** Visualizer with rotating head (portable for relocation around the lab, if required).
- **Extron** 7" TLP Pro 725M Touch control panel
- **Mersive** Solstice Pod Wireless presentation and collaboration functionality from tutor/student mobile devices.
- VGA, HDMI and USB connectivity for user devices.

The lecturer control panel allows the teacher positions to broadcast content onto student screen locations, or a selection of screen locations. In 'split' mode, the teacher position can only control screen locations within the partitioned zone.

It is also possible to share a student workstation feed (local PC or HDMI input) to any other student workstation in the lab (option available only on the teacherbase touch panel).

Building-wide Broadcast

The infrastructure allows live broadcasts to all other laboratories from one teacher base location in BIO. This feature is used during open-day events and seminars to accommodate large delegations.

CHEM Lab

CHEM/PHA Lab is the largest laboratory facility at the new Science Building with AV infrastructure designed to accommodate inter-disciplinary student groups in single or concurrent teaching sessions.

- ✓ **Single-use ('Join' Mode)** - The lab is used as a single teaching space.

  The user can select the teaching mode from the control panel at one of either teacher-base location in the lab. Presentation content can be displayed across all screens in the lab with audio (microphones and audio content) delivered throughout the entire lab, as well as through the induction loop.

- ✓ **Split-Use ('Split' Mode)** – The lab is physically divided into two zones – North and South zone. Two teacher base locations are equipped to deliver two concurrent teaching sessions.

  When two concurrent sessions are in place, lecturer presentation content is restricted to student screens in the relevant zone. Audio transmission is also split between the two zones to meet the needs of two concurrent sessions.

- ✓ **Multi-Lab Join ('Multi-Lab' Mode) –** full use of both BIO Lab 1 and BIO Lab 2

  Audio and presentation content from the teacher base locations can be delivered to other labs on all floors, if required. For security, external broadcasts settings are restricted (and password-protected) to select users with IT clearance to prevent accidental override of other teaching sessions.

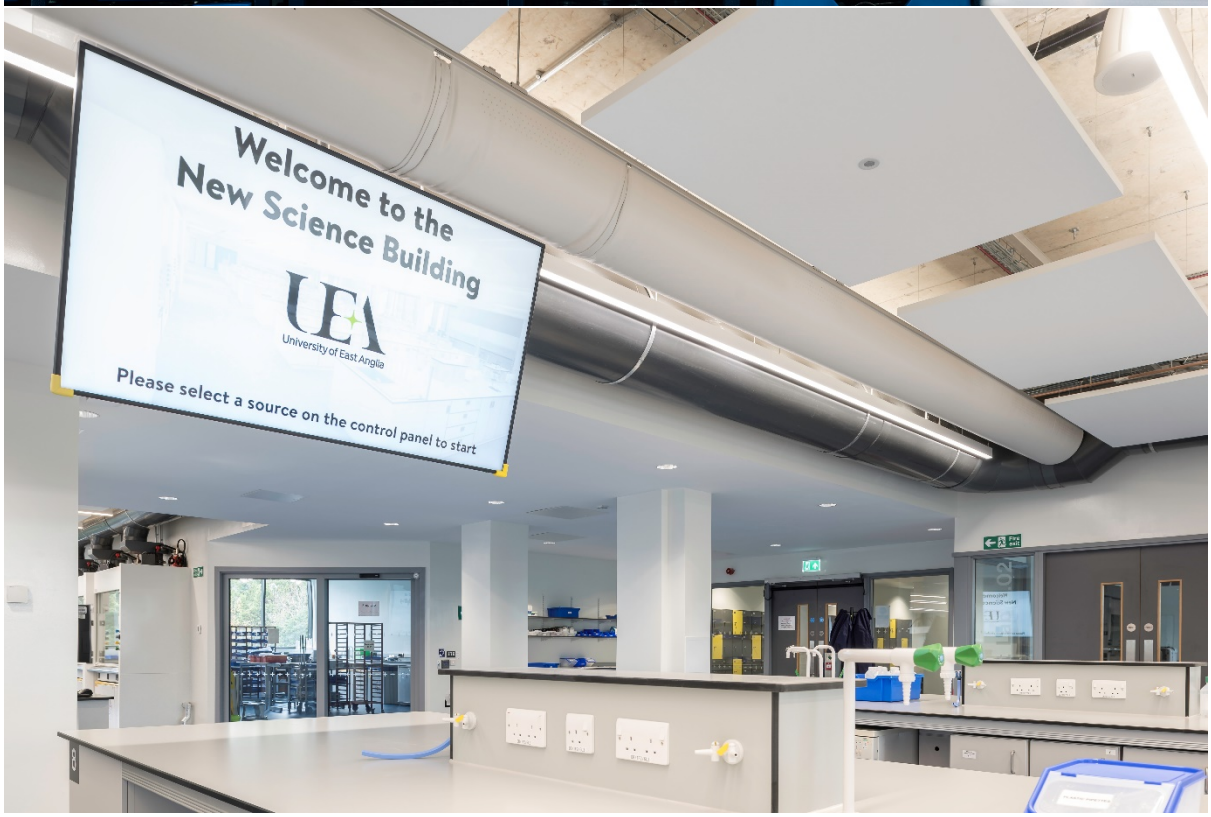
Laboratory AV infrastructure includes:

- ✓ 7x **Panasonic** 75" FHD displays across North and South zones
- ✓ 1x **Panasonic** 75" FHD display at the location of both teacher bases.
- ✓ 10x **QSC** Ceiling speakers and **2x Q-sys** Core 510i (Main Equipment Rack) with DANTE card feed into the network.
- ✓ Each student bench consists of:
  - HDMI input for local devices.
  - Control panel to select the relevant source to be displayed on the associated screen (HDMI input or teacher-base feed). Additionally, this control panel also enables screen power and state choices.
  - Any connected device to a student bench (i.e. laptop) can also be sent to any other screen within the lab (enabled from the main teacher base touch panel).
- ✓ 2x Teacher base locations incorporated within the lab bench:
  - **Magewell** Lecture capture (microphone and content capture)
  - Voice reinforcement via **Shure** MXW wireless lapel microphones and two **Ampetronic** induction loops (for each section of the lab in 'split' mode).
  - 10x **QSC** AcousticDesign Ceiling Speakers
  - **Wolfvision** Visualiser with a rotating head (portable for relocation around the lab).
  - 2x **Extron** 7" TLP Pro 725M Touch control panels for two teacher bases - control student bench screen inputs (presenter feed/local HDMI)
  - HDMI and USB connectivity for BYOD

Each large format displays in the North and South zones also have dedicated control panels and HDMI connections located at the bench closest to its location. These enable full control and selection of the desired source on each display.

The screen above the two teacherbase locations can share separate USB/HDMI input content when connected at the teacherbase. At the start of teaching sessions, the source on this display can be selected on the appropriate control panel at either teacherbase location.


BEAKERS
CONICAL FLASKS
FILTER PAPERS
MEASURING CYLINDERS
FUNNELS
FILTRATION APPARATUS


Welcome to the
New Science Building
UEA
University of East Anglia
Please select a source on the control panel to start

Two Adjacent ENV Laboratories

ENV Lab 1 and ENV Lab 2 are Identical, multi-mode laboratories with AV infrastructure designed to accommodate a combined group of students from multiple disciplines to collaborate. The infrastructure is capable of three teaching modes in each space:

- ✓ **Single-use ('Join' Mode)** - The lab is used as a single teaching space.

  The user can select the teaching mode from the control panel at one of either teacher-base location in the lab. Presentation content can be displayed across all screens in the lab with audio (microphones and audio content) delivered throughout the entire lab, as well as through the induction loop.

- ✓ **Split-Use ('Split' Mode)** – partitions can be deployed to split each lab into two teaching zones for the delivery of two concurrent teaching sessions.

  The AV system delivers two independent streams of presentation content from each teacher-base location to the associated display screens in the sectioned zone, as well as splitting the voice reinforcement and audio playback into these two zones.

- ✓ **Multi-Lab Join ('Multi-Lab' Mode) –**full use of both ENV Lab 1 and ENV Lab 2

  Audio and presentation content delivered to both labs simultaneously, as well as externally to other labs across the building, if required. For security, external broadcasts settings are restricted (and password-protected) to select users with IT clearance to prevent accidental override of other teaching sessions.

The teacher base touchpanel can control each bench screen's input (presenter feed/local HDMI). The lecturer/technician can also select to share content on the projector and student bench screens independently.

Laboratory AV infrastructure includes:

- ✓ 12x **Panasonic** 55" FHD displays (per lab)
- ✓ 2x **Panasonic** 6500 ANSI 3LCD WUXGA projectors and Screen International projection surfaces at opposite ends of both labs.
- ✓ 2x **ZeeVee** AVoIP encoders and decoders at every screen and projector location.
- ✓ **QSC** Ceiling speakers and **2x Q-sys** Core 510i (Main Equipment Rack) with DANTE card feed into the network.
- ✓ Each student bench consists of:
  - HDMI input for local devices.
  - Control panel to select the relevant source to be displayed on the associated screen (HDMI input or teacher-base feed). Additionally, this control panel also enables screen power and state choices.
  - Any connected device to a student bench (i.e. laptop) can also be sent to any other screen within the lab (enabled from the main teacher base touch panel).
- ✓ 2x Teacher base locations incorporated within the lab bench:
  - **Magewell** Lecture capture (microphone and content capture)
  - Voice reinforcement via **Shure** MXW wireless lapel microphones and two **Ampetronic** induction loops (for each section of the lab in 'split' mode).
  - 12x **QSC** AcousticDesign Ceiling Speakers
  - **Wolfvision** Visualizer with rotating head (portable for relocation around the lab.
  - **Extron** Touch control panel

- Mersive Solstice Pod Wireless presentation and collaboration functionality from tutor/student mobile devices
- VGA, HDMI and USB connectivity for user devices.

Two Electronics Labs

Lab 1 and Lab 2 are Identical, multi-mode laboratories with AV infrastructure designed to accommodate a combined group of students from multiple disciplines to collaborate. They can function as a single-use space, in addition to being split into two zones.

- ✓ **Single-use ('Join' Mode)** - The lab is used as a single teaching space.

  The user can select the teaching mode from the control panel at one of either teacher-base location in the lab. Presentation content can be displayed across all screens in the lab with audio (microphones and audio content) delivered throughout the entire lab, as well as through the induction loop.

- ✓ **Split-Use ('Split' Mode)** – partitions can be deployed to split each lab into two teaching zones for the delivery of two concurrent teaching sessions.

  The AV system delivers two independent streams of presentation content from each teacher-base location to the associated display screens in the sectioned zone, as well as splitting the voice reinforcement and audio playback into these two zones.

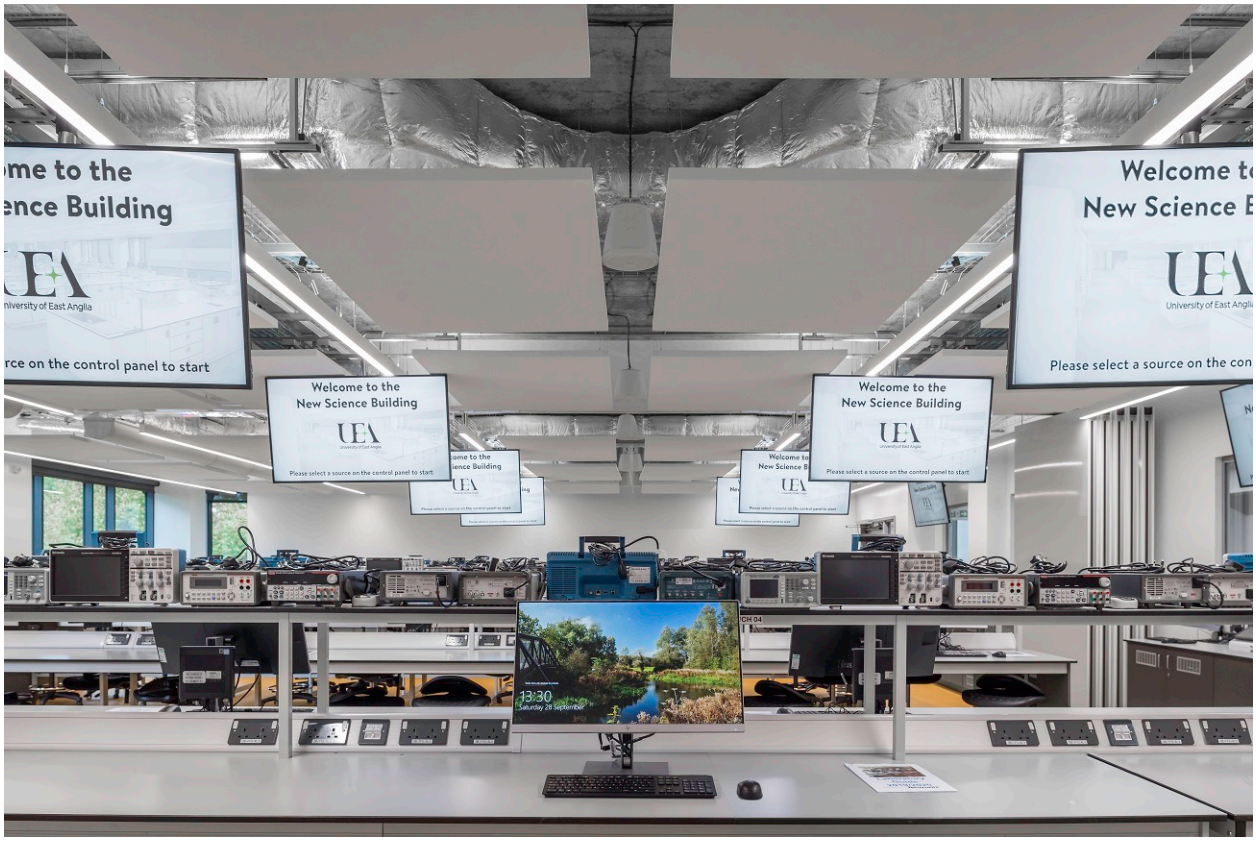
- ✓ **Multi-Lab Join ('Multi-Lab' Mode) –**full use of both Lab 1 and Lab 2

  Audio and presentation content delivered to both labs simultaneously, as well as externally to other labs across the building, if required. For security, external broadcasts settings are restricted (and password-protected) to select users with IT clearance to prevent accidental override of other teaching sessions.

The teacher base control panel provides control of each bench screen's input (presenter feed/local HDMI). The lecturer/technician can also select to share content on the projector and student bench screens independently.

Laboratory AV infrastructure includes:

- ✓ 10x **Panasonic** 55" FHD displays (per lab)
- ✓ 2x **ZeeVee** AVoIP encoders and decoders at every screen location.
- ✓ 12x **QSC** AcousticDesign Ceiling Speakers and 2x **QSC** Q-sys Core 510i (Main Equipment Rack) with DANTE card feed into the network.
- ✓ 2x Teacher base locations in the lab:
  - **Magewell** Lecture capture (microphone and content capture)
  - Voice reinforcement via **Shure** MXW wireless lapel microphone and two **Ampetronic** induction loops (for each section of the lab in 'split' mode).
  - **Wolfvision** Visualiser with rotating head (portable for relocation around the lab, if required).
  - **Extron** Touch control panel
  - **Mersive** Solstice Pod Wireless presentation and collaboration functionality from tutor/student mobile devices.
  - VGA, HDMI and USB connectivity for user devices.



Atrium LED wall

The main atrium features an LED wall façade comprised of three installations, which collectively play relevant content for the building's audience.

The main LED wall is a Full HD 3x X 2m Full HD 1.58 mm pitch LED installation, and supported by two LED installations on each side (1220 x 1720 and 1220 x 1400).

Each LED display is equipped with:

- ✓ ZeeVee Zyper4k decoder
- ✓ Cabletime Signage player
- ✓ Novastar display controller
- ✓ QSC column speakers on both sides of the main display

Digital Signage and Other Teaching Spaces

The Digital signage and IPTV system distributes relevant information and television signals to specified rooms/areas in the building.

Additional large-format display, BYOD and audio installations are also available at smaller labs such s the 'Tissue Culture' and 'Instrumentation' labs.

USER TESTIMONIAL

"Snelling Business Systems worked closely with us throughout the entire design process to give us a cutting edge, advanced AV system that fully supports our vision and requirements of students and staff at our New Sciences Building. They worked closely with me to help translate the end user requirements into a technological solution.

Through conducting this needs analysis not only were they able to provide us with what we requested but also find innovative ways to increase the capabilities in ways which we hadn't necessarily thought of.

Their hands-on approach and personalised service meant that they could easily align the AV system with the University's key principles, in turn bringing our vision and this inspirational building to life.

Having the tools to deliver transformative teaching programmes, support excellent and impactful research and forge networks that enable researchers and scholars across UEA's science faculties to learn from each other, supports our goal.

In its simplest form, the success of this project is seen daily, with lecturers and researchers able to operate the complex system with minimal support, even using their own devices if they choose. We spent a lot of time thinking about the user interfaces and how we were going to present the control of the system to the end users.

This was a very thorough, yet important exercise and as a result, we have been able to service users with an immensely flexible and versatile system that adapts to their desired pedagogy.

This same approach was applied to our central teaching spaces, as well as the labs. During everyday use, there is no technical set up required when a configuration of a room needs to be changed to serve a specific teaching style - the user is placed firmly in the driving seat via the interface of the space's touch panel. Teaching sessions can be recorded in all spaces, making the resource perfect for today's online learning environment.

Another great aspect of the design is its scalability. When we are looking to put on a more elaborate event or double-down to suit smaller groups without completely changing the room, everything can be easily adapted to fit new requirements.

Having the ZeeVee management platform allows my team to view a health status of the system at any time, whilst also delegating the ability to route sources to displays that may not be built into the user interface - enabling us to operate a true virtual matrix across the entire building.

The key measure of success for me is how easily and seamlessly the end users can take control of the system. Its reliability, flexibility and simplicity mean that, after minimal training, general use becomes an afterthought and very little support is required from internal teams.

Thus, we have more time to focus on other important tasks like meeting the ever-increasing technology needs of our students".

Matthew North

Learning Spaces Technology Manager
University of East Anglia

ABOUT US

In plain speak, we are an international supplier of integrated audio-visual systems, environments, and communications technology. We design, integrate, install and maintain robust AV systems and environments.

But 'how' we do it isn't quite so plain.

Our roots go back to 1954 when Roy Snelling started his business selling and servicing Television and Radio sets in the early days of commercial broadcasts.

As more and more Television and Radio sets found a place in living rooms, Roy witnessed a major transformation – an entirely new medium for people to interact, engage and consume information. The same purpose for which we continue to design and build Audio Visual systems and environments.

We have come a long way.

"Snellings" quickly grew into a household name with Roy's steadfast commitment to an unmatched retail experience – 'customer first' – from the moment they walk in the door to a lifelong relationship.

As we grew and evolved, we nurtured this belief in our internal culture – "customer first", as well as our design/engineering philosophy – "Audio Visual Excellence. Operational Simplicity".

Spot an opportunity. Respond to Change.

Technology will evolve. New platforms will emerge, and your needs will transform. Our culture allows us the flexibility to adapt and respond – to keep pace with transformation and change in our industry; to ensure our advice always keeps you ahead of the curve, and your competition.

We deliver all aspects of audio visual integration from design to the supply, installation and on-going maintenance - all backed by a service ethic, which continues to carry the Snelling signature of quality. Based in London and Norwich, we have maintained our portfolio of major clients and diverse projects across corporate, higher education, public sector, defence and aerospace, retail, medical and healthcare, leisure and hospitality, museums and attractions, and niche specifications.

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