VIZRT

Empowering Education:

Utilizing Vizrt Solutions for
next-generation connectivity
and engagement

EMPOWERING EDUCATION: UTILIZING TRICASTER AND NDI® FOR NEXT-GENERATION CONNECTIVITY & WORKFLOWS

It is only in the last few years that there has begun to be parity between technology geared towards entertainment and that which is developed with education in mind. This is something that can be observed in the whole trend towards not only remote hybrid learning but also edutainment, where technology is a critical enabler of experiences that blend fun and learning to keep pupils engaged. As the impetus to incorporate high-quality video (and audio) into teaching sessions, lectures and presentations has grown, the crossover between these areas has intensified. Increasingly, organizations in the education space are turning to affordable broadcast-grade solutions to engage with students and ensure that they remain attentive and responsive.

Even before the dramatic events of recent years, the solutions being chosen needed to be supportive of collaboration and remote access. Enabling contributions from participants elsewhere on campus and off-site had become increasingly important to educators – and, consequently, a determining factor when it came to investing in video and communications systems.

COVID-19 has only served to accelerate a trend that has clearly found favor with the majority of students; indeed, a recent 2021 round-up of statistics by Mark in Style indicated that 82% of students preferred a blend of in-person and online teaching to a classroom-only approach. Increasingly, 'hybrid' is the buzzword as educational institutions look to move more rapidly into the online learning world. Consequently, as they contemplate the next round of investments, they are bound to be placing more emphasis on technologies that support flexible, 'next generation' workflows.

This is something to which Vizrt can attest to as its presence in this market – spearheaded by NDI® technology – has expanded considerably during recent years. Increasingly, educational customers have turned to NDI® and a growing ecosystem of compatible, software-defined products to communicate, deliver and receive high-definition video – all while maintaining low latency and frame accuracy without any reduction in quality.

82%
OF STUDENTS PREFERRED A BLEND OF IN-PERSON AND ONLINE TEACHING TO A CLASSROOM-ONLY APPROACH.

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UEA AIMS TO PROVIDE A PLATFORM FOR STUDENTS, ACADEMICS, AND BUSINESSES TO EXPLORE NEW IDEAS, PROTOTYPE DESIGNS, AND INNOVATIVE PRODUCTS AND SERVICES.

NDI® ENABLES INTUITIVE AND SIMPLE COMPUTER AIDED DESIGN REVIEW FOR STUDENTS

Based in Norwich, England, the University of East Anglia (UEA) is one of the UK's most prominent research universities, encompassing four faculties and 26 schools of study. In 2019, UEA announced that it would be establishing Productivity East – a new regional hub for engineering, technology, and management. With investment from UEA and a grant of £4.5m from the New Anglia Local Enterprise Partnership for Norfolk and Suffolk, Productivity East was designed to provide students, academics, and businesses with a base from which "to explore new ideas to develop prototype designs and create innovative products and services."

Delivering this ambitious facility required the UEA – and key project partners New Anglia Advanced Manufacturing and Engineering (NAAME) and TechEast – to negotiate a series of technical obstacles, including the provision of an AV solution for the facility's CAD teaching studio. One of the primary requirements was for students to be able to review detailed CAD models presented by the academic or session tutor while sitting at their own workstations. One option might have been to locate multiple displays around the room in the continuation of an approach with which the teaching and student personnel were familiar. But due to the layout of the room, this was hardly ideal – not least as the need for each student to glance between their workstation and a display screen would have broken the flow of study.

Consequently, the design teams decided that they needed to find a way to deliver presentation content to student workstations in an "intuitive and simple"
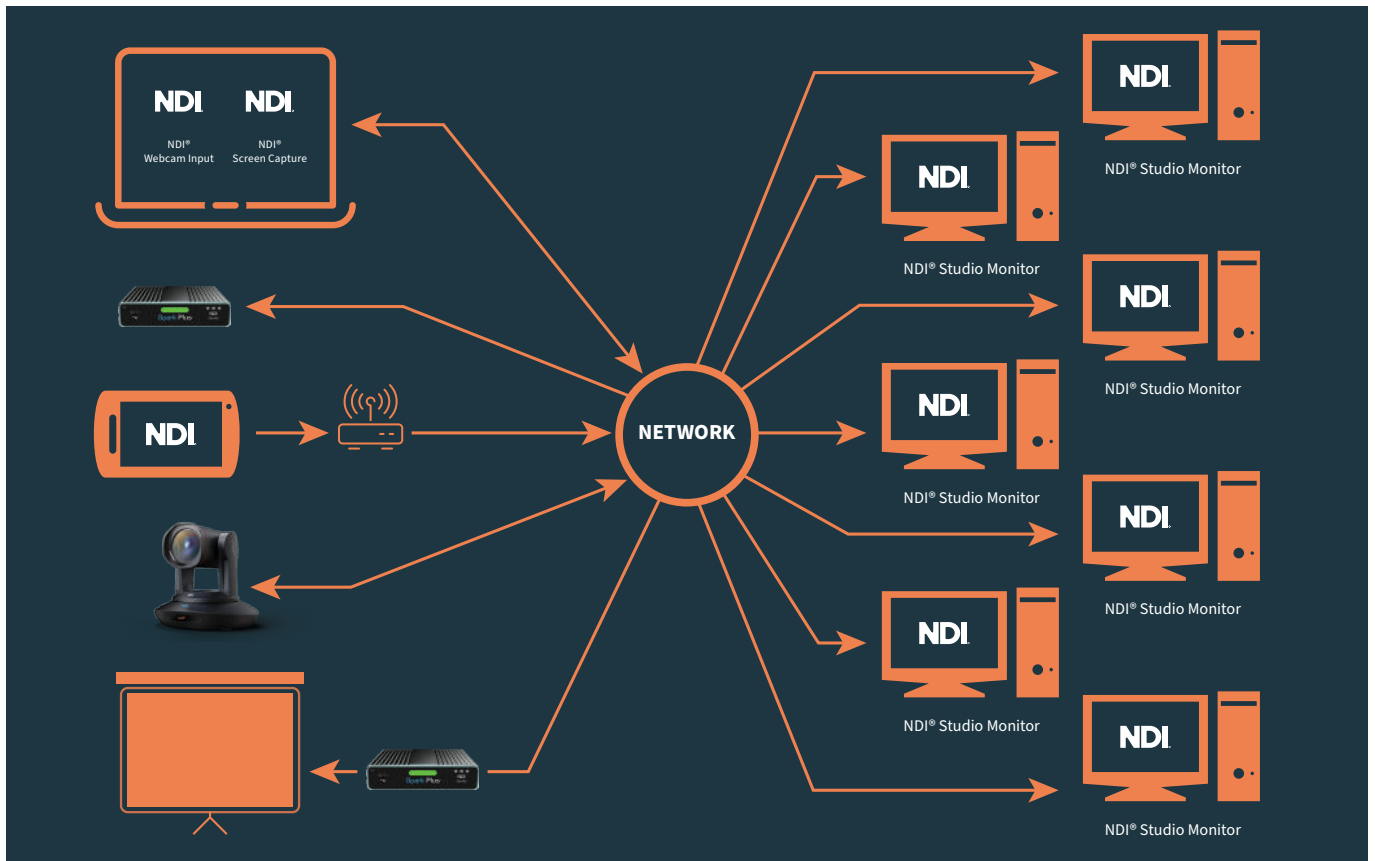
manner. According to Matt North, Head of AV Solutions (ITCS) at UEA: "While we didn't require lossless compression of the content, we did need to ensure that the resulting image delivered to the student desktop was of high quality to ensure students could discern the detail of the presented content."

Awareness of NDI as a leading protocol in this field as well as its functionality, intuitive software, and suitability for use on the UEA network meant that it was soon determined to be the best solution. Once specified, NDI was demonstrated to dispel any lingering concerns about "the practicalities of a software to desktop solution," while Vizrt and UEA's own network team were able to find a quick resolution to some early issues involving managed device firewalls.

The end-result is that the CAD studio now has a very effective software-based solution that is popular with staff and students. It's also surely found favorable in the finance department, with North reporting "significant" cost savings against what would otherwise have been an expensive multi-display solution. Especially given Studio Monitor received at every student desk is a free application, like the rest of the NDI Tools suite.

Whilst the initial deployment revolves around a simple workflow, thought is now being given to extracting more value from the solution by improving opportunities for collaboration by sharing desktops and content across all the workstations. In the meantime, NDI has already been enlisted at another UEA facility to provide additional functionality, with North adding that he is "now comfortable in selecting this technology as a solution for the right scenario." the existing facility to include more functionality as well as the ability to input sources from mobile phones, studio cameras and location cameras."

THE NDI PROTOCOL, KNOWN FOR ITS FUNCTIONALITY AND INTUITIVE SOFTWARE, WAS CHOSEN DUE TO ITS SUITABILITY FOR THE UEA NETWORK.

NDI® AND TRICASTER® DELIVER NEXT GENERATION MEDIA TRAINING

With three campuses across the West Midlands in Wolverhampton, Telford and Walsall and facility in Burton, Staffordshire the University of Wolverhampton has at its foundation the values of innovation and opportunity. The values are combined in the University's many high-tech sites, including a recently modernised facility that makes use of Vizrt's NDI and TriCaster solutions for the teaching of broadcast, corporate and e-sports production.

The new University of Wolverhampton Screen School has been transformed to create state-of-the-art teaching facilities and equipment with the aim of boosting skills in the digital arts and media industries.

Students will benefit from a new production space, an equipment media store, a video studio with movable partitions and a large multipurpose studio. There are also new Mac labs, edit suites, staff offices and a production base room.

The new industry standard facilities include a green-screen, three-camera TV studio with an adjoining production gallery. There is also a new radio studio which reflects the layout of BBC local stations. News readers have access to a second bulletin studio and the technical kit and software will enable the replication of the workflows of national news journalists and the running orders of professional news programmes.

The core courses taught at the Wolverhampton Screen School are animation, computer games design, film and television production, multimedia journalism, computer science, cyber psychology alongside proposals for a new course in visual effects.

The unification of these disciplines reflects the remarkable crossover of technologies that now takes place in many areas of broadcast production. For example, the specification of systems for corporate media – such as streaming presentations – frequently entails the use of what might be termed 'broadcast-grade' solutions.

It made perfect sense that for its recent broadcast training facility upgrade at its Wolverhampton City Campus, the focus was on providing support for more flexible contributions. According to a spokesperson "The aim of this project was to update the existing facility to include more functionality as well as the ability to input sources from mobile phones, studio cameras and location cameras."

As an existing user of Vizrt products, the brand was always in prime consideration for the facility upgrade. As an affordable and multi-faceted media production solution, TriCaster covered a lot of bases for staff and students. In particular, the facility was keen to utilize Live Story Creator, which is a powerful feature that offers a whole new way to make productions more streamlined and efficient using Microsoft Word and Google document-based NDI - teleprompter and automation.

The provision of "excellent training materials" enabled staff and students to get up-to-speed with the latest equipment. Subsequently, the new technology has given the department all the anticipated flexibility – and more. Examples of increased production opportunities include the ability to take live camera feeds from areas surrounding the campus and execute production tasks in other university premises.

> **"NDI offered us the flexibility and connectivity to develop our facilities and bring together the two previously separate TV production areas into one facility."**
>
> **Spokesperson**
> at University of Wolverhampton

MIANYANG TEACHERS' COLLEGE, CHINA: LEVERAGING NEXT-LEVEL TECHNOLOGY TO CULTIVATE MEDIA TALENT FOR TEACHERS

A new 4K/HD All Media Production Center has been built for the School of Communication at Mianyang Teachers' College. The Center supports multi-scene, multi-functional practical training, and teaching, 4K studio system, IP-based production process, and multi-person off-site interaction.

The Center puts together 80+ new smart devices, including 4K camera with NDI converters, a TriCaster centred 4K studio system, NDI management and scheduling system, off-site mobile interaction system, intercom system, lighting control system, fresh air system, teleprompter system, and interactive telestration system.

The Center is divided into zones such as virtual live streaming, seated interview, standing interaction, anchor dialog, off-site interaction, and classroom observation. It is complete with IP transmission, transcoding, calibration, recording, virtual set studio and social media live streaming. It can also be input from an existing baseband such as SDI, HDMI, NDI source, cell phone, and computer NDI sources.

Much of this was done using a TriCaster TC1 with its advanced production capabilities. The TriCaster TC1 enables a full IP workflow including signal programming, conversion, scheduling, and recording, as well as virtual studio and live streaming outputs.

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80+

smart devices including a 4K camera, TriCaster-centered 4K studio system, NDI management, and off-site interaction systems.

COVERING AN AREA OF ABOUT 2000 MU (133 HECTARES), THE MIANYANG TEACHER'S COLLEGE IS SUBDIVIDED INTO 16 SCHOOLS, OFFERING 51 UNDERGRADUATE MAJORS DERIVED FROM 9 FIELDS OF DISCIPLINES.

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130,000

students have graduated from Mianyang.

The project answers the need for talent training among communication schools in the context of media convergence. All-media multi-channel live program production allows news broadcasts, virtual broadcasts, and interviews, among other sorts of programmes.

The 4K UHD (Ultra High Definition) programs, shows, activities, and athletic events may be produced live, and native 2160P videos can be viewed at 60 frames per second.

The four-channel virtual studio enables high-quality virtual keying, video composition, and VR program production. Furthermore, an unlimited number of HD NDI feeds can be transmitted across the campus network to all classrooms, and all camera signals can be relayed from the campus network to the studio.

Interactive program creation, teaching, and internships may all be conducted remotely showcasing a truly hybrid learning environment. The 4K/HD All Media Production Center is outfitted with cutting-edge technology alongside a robust and comprehensive system and workflow, it lays the basis for convergent media construction and future teaching. As information moves more deeply into education, larger steps are required in reforming teaching, optimizing teaching administration, and innovative teaching models.

Mianyang has future proofed its studio to prepare next generation of teachers across China with the most advanced hybrid technology.

Image Source: Guildhall: Matthew Ferguson

UK'S GUILDHALL SCHOOL OF MUSIC & DRAMA BRINGS CONCERTS TO LIFE WITH TRICASTER AND NDI

Based in London, the Guildhall School of Music & Drama has an extraordinary track-record for producing some of the most enduring creative talents in the country. Amongst its many famous alumni in the music world are Beatles producer and pianist Sir George Martin, classical trumpeter Alison Balsom and opera singer Sir Bryn Terfel, while Hayley Atwell and Damian Lewis are just two of its more recent drama alumni.

But it was in the music department where the Guildhall's most significant recent technology update took place. Prior to the pandemic, the need to capture up to 8,000 recordings per year as part of regular assessments of students' progress in orchestral music and performing arts – as well as many live performances and other events – was putting a strain on the existing audio infrastructure. With logistics becoming even more challenging once COVID had arrived, head of recording & audio-visual Julian Hepple was invited to consider what improvements might be made.

"When COVID-19 hit, the school asked if there was anything it could do to the digital infrastructure to support us through this pandemic, as well as improve our teaching and learning facilities for when we opened up again," he recalls.

With social distancing rules meaning a huge reduction in the number of performers that could play in the concert hall at the same time, and the need to accommodate more streaming productions and remote collaboration than was previously the case, the emphasis for the new infrastructure was firmly on versatility and flexibility. **General efficiency of operation and ease of use were also paramount given that, on some days, the team might have to record and stream as many as five separate performances.**

This challenging blend of requirements ultimately led to the specification of a

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>
> **Julian Hepple**
> *Professor*
> at GSMD

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Image Source: Guildhall: Matthew Ferguson

> **"We can log into any machine on our network and route the picture and sound to where we need it. We got latency down to about two frames on the devices across the network."**
>
> **Sam Ziajka**
> *Network and Systems manager*
> at GSMD

workflow based around NDI and Audinate's Dante media networking technology. In terms of actual production equipment, a TriCaster is at the core of the set-up, while there are also multiple other components using the NDI protocol – including BirdDog NDI PTZ cameras and SDI-to-NDI converters and upgraded existing Panasonic PTZ cameras.

The campus-wide NDI network was devised by a team led by Guildhall recording and AV – network and systems manager, Sam Ziajka (at the time as Sam Ziajka has left Guildhall), with help from Vizrt and technology solutions reseller and workflow design team Altered Images. The network covers a total of four buildings in different parts of the campus and works seamlessly with the existing, now expanded Dante network. Staff configure the IP video workflow to suit their requirements through Vizrt's LivePanel browser-based interface enabling control of the TriCaster by even inexperienced users, for up to four separate events simultaneously.

The NDI KVM function on TriCaster enables direct control through the free NDI Tools Studio Monitor application from anywhere on campus, even off-site. As a result, says Ziajka, "we can log into any machine on our network and route the picture and sound to where we need it. We got latency down to about two frames on the devices across the network."

Ahead of the historic event, the GoldMedal Final, an event which has been taking place continuosuly for more than a century, the new TriCaster system was in place and fully operational. Since that time, it has been used to produce two full seasons of digital content involving multi-camera, multi-room performances.

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ASSEMBLING THE AV-OVER-IP DREAM TEAM

Above all, the case studies and thought leadership within this supplement indicate how it is now possible to produce, stream and broadcast a huge variety of teaching and other educational events – assuming you have taken the time and trouble to assemble the most capable 'AV-over IP-dream team.'

At the most fundamental level, this involves putting in place a networking technology that underpins a comprehensive and extensive product ecosystem. This is precisely what education customers can access by using NDI enabled TriCaster solutions. Hence, in education, it has been deployed in a broad spectrum of teaching and academic environments – ranging from broadcast-style suites and concert halls to practice spaces and lecture rooms.

TriCaster and NDI make it easy to work with AV, with familiar devices and controls, name-based operation and more. But the greatest benefit of a software-defined IP environment is the ability to shape it to your needs as opposed to being tethered to a rigid, limited environment. All of the developments examined in this eBook show that, despite their diversity, educational applications of all kinds require the highest possible quality audio and video. With plenty of emerging technologies set to impact the sector over the next few years at the same time as hybrid learning expands, making a decision now in favor of AV-over-IP and IT deployment is eminently sensible. And by fostering an inclusive approach to technology from the start, schools and colleges can ensure they take their staff and pupils on that journey.

The key though, to success in this remote hybridised world and to embarking on an AV-over-IP and IT deployment requires the right team, empowered by the right technology for success.

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