International Higher Educational Applications of Video Conference Connectivity

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Robert L Woodruff

Foreword

Using Video Conference in Education is far from a new concept. Indeed, its application has increased in recent years due to broadband access in many world areas, but it preceded broadband internet with the use of fibre optic, ISDN and other available infrastructure at the time. The use of Video Conference teaching and learning is expanding, however, with the lower costs and wider access available through high speed broadband.

The following articles are collected from the web pages of VC Insights and reproduced with their permission. I present this compilation since it not only illustrate the diverse applications of the technology in connecting people, virtual classrooms and institutions, but also lists the infrastructure used in most cases, thus forming a good reference for our own use as we explore future developments in blended learning and its inclusion of Video Conference utilization.

As these articles illustrate, the geographic spread of Video Conference educational efforts is growing. In strategic planning for future developments, it is also important to note that, in the next few months and years, these possibilities will expand rapidly with future roll-outs of broadband internet, third generation 3-G telephony (which is already being used for video conferencing in some areas) and improved satellite connectivity. The key is to utilize the existing system wherever possible, thus paving the way for immediate inclusion of future sites as their infrastructures develop.

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Your partner in ministry,

Bob Woodruff

Contents

United Arab Emirates - Ajman University of Science and Technology	4
Great Britain - Cambridge University	5
United States - Case Western University	7
Australia - Central Queensland University	10
Australia - Edith Cowan University	11
France - Picardie Universities	13
Africa - African Virtual University for Teacher Training (Kenya based)	15
Brazil - University of Northern Parana	17
France - Groupe des Ecoles des Mines	18
India - Xavier Institute of Management	19
Japan - Gifu University	21
Scotland - UHI Millennium Institute	22
Australia - James Cook University	24
Italy - Piemonte University	26
USA - Texas Tech University	27
China - China Academy of Sciences	29
Great Britain - Hull York Medical chool	30
Great Britain - Open University library	32
The Netherlands - Erasmus University	34
United States - Notre Dame	35

United Arab Emirates - Ajman University of Science and Technology

At Ajman University of Science & Technology in the United Arab Emirates (UAE), Polycom videoconferencing solutions designed by FVC links the students across four campuses

Ajman University of Science & Technology (AUST) is a distinguished institution of higher education in the United Arab Emirates with campuses in Ajman, Abu Dhabi, Al Ain and Fujairah. Videoconferencing is used to link AUST's network of campuses, centers and offices based in different Emirates across the UAE.

First Video Communications (FVC) has implemented a video network across AUST'scampuses in Ajman, Abu Dhabi, Al Ain and Fujairah using Polycom endpoints (ViewStation FX etc.) and a Polycom Gateway. VC has been providing AUST with Polycom videoconferencing equipment as well as its services for more than 2 years.

Videoconferencing has benefited the University in a number of ways, by eliminating the time and hassle associated with physical traveling, and expanding its knowledge base across the region. By connecting teachers and students across its campuses, and providing enhanced professional development through meetings and training, the University can save a major portion of their student and faculty travel expenses.

Commenting on the success of the technology, Mohamed Salman, Information Technology Director, AUST, said: 'Although our main vocation at Ajman University is education and research, we are devoted to investing in real time, world class facilities, technologies and services beneficial to our students and staff. Video conferencing has proved to be a key element in linking all the entities of the University network despite the physical distance.'

'We are pleased to be associated with FVC and Polycom as the quality of systems and services provided are excellent. We look forward to working with them more closely in the near future to help us bridge the way for a new generation of students.' Mr. Salman further added.

Adding to this, K.S. Parag, Regional Director, FVC said: 'Video conferencing in the Middle East has come a long way in recent years, and Polycom has been at the forefront ever since. The educational sector is a prime focus for us and we are confident in providing Ajman University with avant-garde solutions and services to complement their level of proficiency in the Middle East educational field. With the recent launch of Polycom's first ever Arabic User Interface for video conferencing, we hope to further strengthen our relationship with them.'

Great Britain - Cambridge University

Cambridge University's effort to revive interest in learning Latin in British schools overcome small class size and a shortage of teachers by using TANDBERG videoconferencing systems

8 November 2004. Cambridge University's School Classics Project (CSCP) aims to to revive the place of Latin and classical culture in the British school curriculum. Today, fewer than 5% of students over the age of 11 even have access to a qualified teacher. The rest can gain a simple introduction to the subject through "e-learning" resources, including interactive documentaries and dramatizations produced by the Cambridge project and its partners. But students who are GSCE candidates in Latin in Year 10 and Year 11 really do need a live teacher.

Latin is of course the root of all Romance languages and a major element of English. People who know Latin can learn modern languages more quickly and — ipso facto — perform better in the global economy. "We trying to make Latin available to everyone who wants to study it," says Mr. Griffiths, who is Project Director at CSCP. The project relies on books, DVDs, and the web to bring the Roman Empire to life for university-bound teens. … and videoconferencing,

That's where the Ms Gillian Mead comes in. She is the voice and face of ancient Rome to teenagers around the UK. She meets each group of Latin enthusiasts twice a week for two years by videoconference from the Cambridge University Faculty of Classics.

"Here at Cambridge I have quite a small office," she says, "but it's an effective teaching platform. In addition to the TANDBERG system I have a white board, a document camera and my own PC. Visual stimuli are important. Sometimes I'll put an ancient Roman bowl on the document camera, or just a post card. We've also been known to play Bingo with Latin words."

Her students are all "out there" — in Essex, Shropshire, London or wherever five or more teenage students of Latin can gather. They are a diverse lot. One of her current London classes is based at Barking Abbey School, very few of whose students typically go on to tertiary education.

The kids, of course, have no problem operating the TANDBERG 880, and neither does Ms. Mead, who at the age of 56 describes herself as "very low-fi." "I came from a traditional classroom and was very wary at first," she recalls, "but right away the technology won me over. It's very easy to use. I do everything I would in a normal classroom."

When she met one of her classes in person recently at London's British Museum, no introductions were necessary. "Being with these kids on screen can be a very personable experience," she says. "It's a great novelty to them at first, and they may spend the first lesson giggling. But by the next meeting they have generally bought into the idea, and we just go to work with no fuss."

One advantage over a conventional classroom is that the students learn quickly to speak one at a time. The Cambridge project also teaches independent learners of all ages by video from their own homes.

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United States - Case Western University

Case Western Reserve University selects Virage software to power its MediaVision Application that archives and catalogues video of live lectures and course notes for later retrieval by students

23 November 2005. Case Western Reserve University has selected Virage software to power their MediaVision Courseware application. Besides providing traditional audio-visual services, MediaVision creates an innovative learning environment, offering advanced new technologies, such as videoconferencing, streaming media and an interactive digital television system.

Virage's ability to process text, voice and video allows Case to efficiently manage a full range of multimedia assets. By using Virage core technology, MediaVision is able to provide cutting-edge information technology services, improving the quality of education for the entire campus.

One of the current projects where Virage has successfully been implemented is the University's Courseware project, which creates an integrated learning environment on the Web and is available online for all MediaVision-supported courses. Through the website, students and faculty have 24 hour access to a single, web-based repository for all course materials including interactive calendars, on-line study sessions and announcements.

Virage's VS Archive enhances retrieval capabilities for lecture courses which are videotaped, digitized and broken down into several clips based on topic, giving users the option of watching a specific portion of the lecture or the entire video. The solution also automates the processing and categorizing of the original footage, removing the once highly manual and time consuming cataloging process.

Additionally, the technology's advanced voice recognition capabilities allow users to use natural language queries in order to locate the clip containing the relevant subject efficiently. Since Virage forms a conceptual understanding of the query, it can find the precise information sought and deliver targeted results. Case is currently using Virage to streamline the indexing process for all rich media, enhancing university resources and student education.

Besides creating a positive learning environment for students, especially incoming freshman transitioning into a university setting, MediaVision has helped increase the average student grade in classes utilizing the technology.

Students are now able to review particularly difficult or confusing parts of the lecture which they did not fully grasp during class. In addition, students who speak English as a second language can utilize Virage speech-to-text function to follow a speaker's words visually, helping them stay on par with native English speakers.

The technology is helping combat typical classroom problems such as distractions during class, limited attention spans, keeping up with the instructor and attendance issues for student athletes.

Case is also working on developing a closed-captioned system based on this technology so that hearing impaired users can benefit from the software. As a result of the MediaVision's success and popularity, students can make the most of their educational opportunities.

Mike Kubit, Asst. Director of Instructional Technology & Academic Computing at Case said, "Virage is a very powerful tool which supports the University's mission of integrating traditional course management system tools with its commitment to student success. The evaluations of both learning outcomes and student satisfaction have been consistently positive and deemed valuable by students and faculty alike. By using Virage, Case is able to digitize and index its vast collections of media content quickly and efficiently, providing users with increased educational quality."

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But the priority of Mr. Griffiths is to continue reviving Latin and classical culture among 14-to 16-year-olds at public and private schools. "We're expecting the number of schools to increase as the years go by," he says. Thanks to an imaginative use of videooconferencing.

Australia - Central Queensland University

Central Queensland University uses a RADVISION viaIP 400 160-Port MCU to provide a mixed IP/SIP Communications Network with H.323 video in lecture theatres and SIP at the Desktop

18 December 2003. Central Queensland University Central Queensland University (CQU) is one of Australia's most innovative and richly diverse universities. More than a dozen learning facilities and campuses are situated along the east coast of Australia, the Pacific and South-East Asia. CQU is one of the country's leading provider of tertiary education to overseas students.

RADVISION and Broadreach Services, a leading distributor for IP Conferencing products in Australia, have implemented a viaIP 400 Conferencing Platform for the University. The installation includes two RADVISION viaIP MCU's (160 Ports), advanced media processing cards, redundant gatekeepers, redundant scheduler and a viaIP IP/ISDN Gateway. The new video network delivers in excess of 100 hours a week in educational content, and many more hours of face-to-face administration meetings,

The network will initially provide visual communications services, based on the H.323 IP communications protocol, to select lecture theatres throughout the CQU network. The University also plans to leverage the RADVISION platform's full support of the SIP communications protocol to roll out desktop multimedia conferring solutions to staff computers/laptops network-wide.

Gadi Tamari, CEO of RADVISION said "Education has long been one of the most enthusiastic adopters of visual communications technology ... RADVISION is pleased to have been chosen by Central Queensland University in this huge 160-port installation, spanning Southeast Asia in a single integrated videoconferencing network. Both the scope of the project and the architecture used makes this installation significant for RADVISION and the industry as a whole."

"For CQU, videoconferencing is a critical technology underpinning teaching and learning operations. The new RADVISION solution has allowed CQU to extend the reach and application of video conferencing cost effectively, whilst providing reliably and new features that will enhance teaching, learning and collaboration across our campus communities," said Ian Jenkins, Information Technology Division Director at CQU.

Broadreach Services played a major role in ensuring a successful implementation, together with the CQU team, through comprehensive implementation management which involved extensive planning, risk management, video application network testing prior to implementation and successful migration to production.

Australia - Edith Cowan University

Edith Cowan University of Perth, Western Australia uses technology from RADVISION and Microsoft to create a Rich Media Collaboration System for Students and Lecturers

20 July 2005. Edith Cowan University (ECU) is located in Perth, Western Australia. It is a market leader in education for the service professions with an international enrolments exceed 3,000 with students originating from more than 80 countries. ECU began as a teaching college in 1902. Today, it is Western Australia's second largest university with approximately 23,000 students.

The University has three metropolitan campuses in Churchlands, Mount Lawley and Joondalup and a regional campus in Bunbury, a city 200kms south of Perth. More than 330 courses are offered through the five faculties. More at www.ecu.edu.au.

Broadreach Services is a leading systems integrator and distributor of visual collaboration products in Australia; has represented, marketed and implemented RADVISION voice and video communications solutions in Australia for the last six years.

Broadreach Services designed the visual communications platform for Edith Cowan University. Implemented in December 2004, ECU's 23,000 students are connected with the most advanced technology available today and with an interface that is most inviting and usable.

Broadreach undertook comprehensive project management that involved extensive planning, risk management, video application network testing prior to implementation and successful migration to production. Broadreach integrated the following equipment and software:

RADVISION - Conferencing Platform with IM First integration Microsoft Office Live Communications Server(TM) Microsoft Office Communicator 2005 Jasomi Networks - Peerpoint for Microsoft LCS Starbak - Video streaming and recording Web cams

Previously, the university was able to videoconference only to another videoconferencing unit. Voice conferencing was only possible from a telephone to another telephone or mobile phone. With the Broadreach/RADVISION solution, it is now possible to easily connect into a video conference or a desktop webcam conference.

"These tools have allowed us to work collaboratively at an optimal level by seeing and talking to each other. Real outcomes are the result of people collaborating with people," said Jeff Murray, Director Knowledge and IT Service Centre, Edith Cowan University.

"ECU's vision was clear -- connectivity for teachers and students allowing real-time video conferencing from a student's laptop anywhere and anytime," said Shaun Wormald, Broadreach Services Managing Director.

Today, the network provides visual and audio communications services to students and staff throughout the ECU network. Better communication is achieved because teachers are allocated time slots for face-to-face webcam discussions with groups or individuals.

What makes this installation especially significant is that ECU has leveraged RADVISION's support of SIP within its products to roll out desktop visual communications solutions using Microsoft Office Live Communications Server to staff and student computers/laptops network-wide.

"Edith Cowan University has combined an integrated communications solution that demonstrates our shared vision of delivering secure, scalable, real-time productivity tools including instant messenging, voice, video and data that empower staff and students to become more effective in teaching, learning and research," said Oscar Trimboli ANZ Real Time Collaboration Business Manager at Microsoft.

Staff and students can access the technology from home or via the internet using firewall traversal technology implemented by Broadreach Services. "Ultimately, what we have created is a fully integrated collaborative solution that enables any device to connect from anywhere in the world" said the University's Jeff Murray.

Jeff Murray concluded: "ECU's video conferencing system is a critical technology underpinning teaching and learning operations. The RADVISION solution has allowed the university to cost effectively extend the capabilities of video conferencing usage, while providing new features that will enhance teaching, learning and collaboration across our campus communities."

France - Picardie Universities

France's Picardie Universities select VCON videoconferencing systems for its e-Learning IP broadband network; the universities access National and International research and education community

3 December 2003. France's Picardie regional university network operates over an existing broadband regional network connected to the RENATER network, the French National 2.5 Gigabyte network meeting national requirements of Education and Research.

The Picardie network includes the deployment of numerous VCON endpoints (MediaConnect 9000 for group conferencing; Escort and ViGO for desktop interactive video).

All videoconferencing endpoints are managed by two Media Xchange ManagerTM (MXM) servers cascaded together. The VCON Conferencing Bridge is combined with RADVISION's IP/ISDN gateways for multipoint services that allow multiple participants in any given session. Videoconferencing over IP networks (both the LAN and the Internet) is accomplished easily with directory services, and ISDN (H.320) videoconferencing is accomplished via the gateways.

"VCON adapted Picardie's existing IP infrastructure to the specific requirements needed to deploy an advanced videoconferencing network," noted James Lellouche, Sales Manager, VCON France ". "We are particularly proud of the technical acumen exhibited by our partner, Medialan, in using the unique features of the MXM to exploit existing resources," added James Lellouche.

"VCON's MXM, with its client/server architecture enabled us to significantly reduce the resources we had anticipated expending on network administration," explained Jean Marc Bérenguier, Data Processing Strategy Manager for the Compiègne University of Technology, a member of the Picardie network of institutes of higher education. "With less manpower required to manage the network, we were able reallocate assets to set up IP broadband links and SDSL connections for secondary and high schools in the region," added Jean Marc Bérenguier.

"With the support of VCON solutions, we are meeting our goal of bringing equal communication opportunities to every corner of our region," said Marc Bertin-Boussu, Telecommunication Manager at Jules Verne University of Picardie.

The Jules Verne Universities of Picardie joined with the Compiègne University of Technology (UTC), to make this project possible. Jules Verne University of Picardie has a total of eight sites located in three regions, providing a comprehensive solution to local requirements for higher education. Jules Verne is a youthful institution (average student age less than 35), multi-field (12 faculties, 6 institutes, 30 research teams) with almost 20,000 students. It provides more than 300 nationally recognized certificates including professional certificates.

UTC is a public institution established in 1972. UTC's goal is the promotion and development of technology in education and research. UTC, along with the Belfort

network of the Universities of Technology.						
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Africa - African Virtual University for Teacher Training (Kenya based)

In Africa, Open Educational Resources portal gives access to education to people in developing countries; Hewlett Foundation's \$900,000 Grant to African Virtual University for Teacher Training Program

21 November 2005. A new Web initiative, launched last week at the World Summit on the Information Society (WSIS), will connect anyone with Internet access and the desire to learn to a world of free, high-quality open educational materials. The Development Gateway Foundation's Open Educational Resources portal aims to equalize access to education and help people in developing countries improve their chances for a better life.

The portal features free course materials and other educational content offered by the Massachusetts Institute of Technology, the Johns Hopkins School of Public Health, Chinese Open Resources for Education and other institutions around the world. The initiative is launched in partnership by the Development Gateway Foundation and the William and Flora Hewlett Foundation.

While content on the Open Educational Resources portal is particularly geared to educators, students and self-learners in developing countries, it is available for everyone. The portal will also facilitate communication among the growing online community of providers and users of free, online educational resources.

Alan J. Rossi, Chief Executive Officer of the Development Gateway added, "Our goal with this new portal is to encourage more citizens and universities in the developing world to tap into the wealth of free, educational resources available online so more people have a shot at improving their lives and their future."

The Hewlett Foundation also announced a \$900,000 grant to support the Teacher Education in Sub-Saharan Africa (TESSA) initiative, an "open content" resource bank of educational materials to train teachers in basic curriculum areas including literacy, numeracy, science and life and health skills. TESSA is a consortium of African and international organizations. It is led by the African Virtual University (Nairobi) and the Open University (UK).

"We launched the teaching the teachers program to directly address the enormous challenge of educating and training the millions of teachers needed in sub-Saharan Africa," said Rector Kuzvinetsa Peter Dzvimbo of the African Virtual University. TESSA will initially be implemented in Tanzania and South Africa.

The African Virtual University focuses on enhancing the capacity of African universities to increase access to their own programs and those of educational institutions around the world. It is an independent inter-governmental organization based in Nairobi, Kenya, with over 57 Learning Centers in 28 African countries. For more information visit www.avu.org.

Funding for the new Open Educational Resources portal and for TESSA is provided by the William and Flora Hewlett Foundation. The Foundation supports a wide portfolio of Open Educational Resource initiatives, including MIT's OpenCourseWare to publish course

materials from virtually all MIT courses and Widernet eGranary to improve digital access in developing countries.

"These two innovative activities will provide access to high quality content drawn from throughout the world," said Marshall Smith, Educational Director of the William and Flora Hewlett Foundation. "This is critical in areas such as Africa, where lack of infrastructure and the high cost of education prevent millions of people from raising the quality of life in their communities."

Brazil - University of Northern Parana

In Brazil, UNOPAR selects Hughes broadband connections by satellite to expand the reach of its Connected Presence Teaching System (a Distance Learning Operation) in the State of Parana

25 October 2005. UNOPAR, the University of Northern Parana, has made the city of Londrina the most important center of the interior of the State of Parana in Brazil. It has campuses in three Parana towns, with nearly 16,000 students enrolled in its regular programs. It also has 252 Distance Learning sites, totaling about 60,000 students. Its Connected Presence Teaching System uses interactive, advanced technology environments to offer courses and programs on the development, training, and updating levels.

Hughes Network Systems Americas (HNSA) is to provide its DIRECWAY(R) broadband satellite services to these 252 locations throughout the State of Parana using the DW7000 Broadband Router. UNOPAR will utilize the HNSA supplied network to start serving approximately 60,000 students enrolled in its Connected Presence Teaching System (CPTS), spread throughout 252 Brazilian municipalities.

UNOPAR intends to close the year with installations in 300 sites, including expansion into Argentina and Paraguay. In addition, four new simultaneous program generation classrooms will be offered beyond the three that already exist. The goal in 2006 is to have 150,000 Distance Learning students enrolled in its program.

UNOPAR opted for the advanced DIRECWAY satellite broadband network, which offers high-speed Internet access, data and video transmission, and voice over IP, ensuring highly secure and reliable connections throughout its coverage area. It will allow, for example, both teleconferencing and Corporate TV operations, which are fundamentally important for distance learning.

"We decided to operate the network ourselves, with the DIRECWAY Network Operations Centre (NOC) located in our facilities in Londrina, as we found the platform to be quite user friendly," added Navarro. "UNOPAR is in the process of obtaining the SCM license from Anatel for this purpose," he said.

UNOPAR's Connected Presence Teaching System (CPTS) uses advanced, interactive technology environments to offer numerous training courses and programs, and updating educational levels. To undertake these activities, students have Internet and IP based teleconference resources available to them. CPTS also offers the supporting materials in print and in digital format for research and supplementary study.

Navarro believes that with the HNSA supplied solution, UNOPAR can offer quality teaching to needy people even in the most remote locations: "We can teach people to use computers and the Internet. The Web platform -- and computer use -- truly eliminates the digital divide. Everyone can enjoy broadband Internet access, and students can even send and receive their assignments over the Internet."

France - Groupe des Ecoles des Mines

In France, Marratech provides the videoconferencing solution for collaboration between researchers and professors in different locations or between students working away from their university

5 December 2005. The Groupe des Ecoles des Mines (ŒGEM¹) in France, has adopted an internet based solution which enables fully collaborative meetings and conferences between educators and students regardless of their location using simple laptop computers. Server software from Marratech is used to create virtual meeting rooms which are used by professors at their desks and students at their homes or abroad at other universities.

Christian Colin is coordinator of the <u>CRE@TIVE</u> (Centre for the Study and Diffusion of Educational Technology and Innovation) network (GEM) of work groups for Information and Communication Technologies Applied to Teaching (TICE).

He said: "Students on internships or exchanges with institutions abroad still need regular support from their professors despite the distance. Hence the need for effective distance collaborative tools that combine an interactive whiteboard, application sharing and chat. Traditional videoconferencing does not meet this need."

He continued: "Marratech overcomes the limits of other technologies. A multi-platform solution compatible with our existing IT systems was a key criterion. All users, students and professors, can use web conferencing from their own desk tops on Windows, Mac or Linux. Its simplicity of use, stability, security was also important."

The GEM is confident that Marratech will give a positive rapid return on investment. Already, it has replaced many costly journeys and has encouraged new networking opportunities. For example, it has enabled more people to participate in monthly IT meetings between its seven establishments in the GEM.

The GEM, which brings together seven French Grand Ecoles, represents a centre of excellence in engineering science. The seven Ecoles¹ collaborate with almost 220 foreign universities, have strong links with industry and enterprise and require all of their 6.000 students to undertake internships with companies in France and abroad. The Ecoles, with their strong committment to research are at the forefront of developments and innovations in pedagogical techniques.

India - Xavier Institute of Management

In India, a Virtual Class Room to offer a one-year Program in Business Management, nationwide will be created by Reliance Infocomm Ltd., India's largest private telecom service provider

4 May 2005. Reliance Infocomm and Xavier Institute of Management, Bhubaneshwar (XIMB) have announced the launch of India's first ever post-graduate programme in Business Management through virtual classrooms in over 100 cities via 240 Reliance WebWorld outlets.

The partnership harbingers a major breakthrough in distance learning in the country. As per the tripartite arrangement, XIMB will offer one-year Post-Graduate Certificate Program in Business Management (PCPBM) using Reliance's platform. In due course, management development and customized training programmes for enterprises will be added to the product suite.

Reliance WebWorld, a Reliance group company, is a nationwide chain of retail stores for digital entertainment and communication and serves as one-stop-shop for Reliance Infocomm products and services. Each store is planned for three key modules – a Customer Convenience Center, JAVAGREEN a gourmet coffee bar and a Real Broadband Center.

Blueshift will co-ordinate and manage the programme. Blueshift is an Atlanta and Chennai-based software and services provider with a focus on turnkey solutions for academic Institutions and HR process automation for corporates. It is India's first and largest online admissions management services provider having processed over 180,000 applications for over 25 institutions last year.

These virtual classrooms will be as good as the real ones except that students will participate from Webworlds using the latest, most powerful and most flexible technology available. Unlike satellite-based technology, this medium offers real-time, multi-way audio and visual presence of the professor and the students. The students can see and hear the professor live, view slides, audio-visuals, participate in interactive sessions with the professor and other students. Those who miss the class can catch up with the video recording on-demand at the Web Worlds.

The course will begin with an online registration and examination process initially across 12 cities through which students will be short-listed.

Announcing the tie up Fr. E. Abraham, Director of XIMB, said, "We are proud to partner with Reliance WebWorld and Blueshift to make it possible for students and working executives to do a world-class management programme without having to relocate from their home towns. We have designed the course, and chosen a mode of teaching that will revolutionize the way education is imparted in India"

With a focus on academic rigour, infrastructure, technology and innovation, XIMB has established itself among the best business schools in India. Founded on the established values of the Jesuits, the institution was conceived through the association of the Orissa Jesuit

Society and the Government of Orissa. It prides itself on its outstanding faculty, state-of-the-art infrastructure and diverse academic activity.

Sarup Chowdhary, CEO, Reliance WebWworld, said: "We offer the best proposition for content providers and institutions running certification programmes through distance learning as well as corporates conducting their internal training programmes. Besides aggregating and partnering with the best of the content providers worldwide, Reliance WebWorld will also partner Universities and Institutes of repute for long term certificate/degree courses." Russ Colbert, global education market director for Polycom, said: "We wanted to develop a program that would offer free quality content to educators who rely on interactive video learning programs. Video conferencing enables our educators to teach with a blended learning approach, making interactive distance learning a reality without teachers needing to focus on the underlying technology."

Polycom's Video Conference Program Database contains content from over 1,500 providers such as zoos and museums offering ISDN or IP based video conferencing. This easily searchable database was developed by BCISD and brings Polycom's education customers value-add programs for the classroom. For more information and to access the program database please visit: Videoconference Program Database at www.polycom.com/solutions/education and press the button "Find all records."

Japan - Gifu University

In Japan, Gifu University extends distance learning to reach to Geographically-Dispersed Students using a Polycom MGC-100 MCU and Polycom's VSX 7000 videoconferencing systems

Posted 31 October 2005. Gifu University is centrally located in Japan's Gifu Prefecture. Approximately 283 professors and 800 technical and administrative staff offer courses to over 6,000 undergraduates and 1,700 post-graduate students.

The University first deployed classroom video conferencing in 1997 to assist remotely-located students. Since then, Gifu University has extended its distance-learning network to connect six dispersed campuses – including the main campus in Gifu City, and others in Takayama, Tajimi, Kakamigahara, Ogaki and Kumamoto.

Today, the university also connects to other schools across Japan, and even overseas – allowing students from high schools, adult extension courses, and graduate schools to simultaneously view course materials and their remotely-located peers on large classroom monitors.

With the help of video conferencing, Gifu University is creating a "just like being there" experience for its distancelearning students – providing a viable alternative to traditional classroom education.

As Internet Protocol (IP) gained mainstream adoption, Gifu University searched for a second-generation MCU that would offer seamless ISDN and IP communications, simultaneously connecting multiple sites. Polycom's Unified Collaborative Communications (UCC) solution met all of Gifu University's demanding requirements. Lecturers and students alike are extremely satisfied with Polycom's video conferencing deployment, resulting in increased system adoption across all the satellite classrooms in the program.

Polycom's easy-to-use and intuitive video conferencing solution has ensured that Gifu University's students and staff can independently operate the system, without any technical help—allowing them to focus on the lessons, rather than the technology.

While students enjoy the convenience of virtual lectures, professors find that having their lectures broadcasted to large audiences, and even taped for video-on-demand viewing, is a motivating force – resulting in improved teaching methods.

Gifu University's Unified Collaborative Communications solution includes a Polycom MGC-100 MCU, Polycom PathNavigator, Polycom's award winning VSX 7000, which delivers the industry's highest audio and video quality, as well as the ViewStation and ViaVideo series.

Besides virtual lectures, this solution provides total Video-on-Demand (VOD) support that enables students to freely watch previously-recorded lectures, if they are not able to attend class due to work obligations or illness.

Gifu University's distance learning initiatives extend beyond its tertiary courses. Since 1999, the university has been offering community education courses – featuring interactive lectures

between the main conference centre in the prefecture and remotely-located conference halls – on relevant topics like "Family Education Support for Today".

The university also offers "joint courses" linking high schools in the prefecture via video conferencing, and then broadcasting these classes via satellite to students nationwide.

Gifu University plans to connect with more universities around the world in the future, based on the success of its initial programme with the University of Sydney in Australia. Other future video conferencing initiatives include actively linking with private Japanese universities. More information is available at http://www.gifu-u.ac.jp/english.

Scotland - UHI Millennium Institute

In the Highlands and Islands of northern Scotland, TANDBERG videoconferencing systems have expanded the reach of university-level education to the people of UK's remotest communities

Posted 19 December 2005. The beautiful Highlands and Islands of northern Scotland are a tough domain for a university system. There is no shortage of bright, motivated students. The problem is that they are scattered across mountains, glens, and a broad, windswept expanse of the North Atlantic Ocean. (See picture)

Fortunately, academia today is a state of mind. Some 6,000 far-flung Highlanders and Islanders are enrolled in UHI Millennium Institute, a partnership of 14 colleges and research institutions that takes higher education to the northernmost reaches of the UK. One of UHI's most powerful delivery tools is a network of 55 TANDBERG video communication systems.

"We're so spread out," comments Phil Masterson, the institute's Videoconferencing Coordinator. "The UHI Executive Office is in Inverness," he explains, "but we have important functions in remote areas of Argyll, in the Outer Hebrides, Perth and other places. Our video network is controlled from the Shetland Islands, 130 miles north of the Scottish mainland. That's halfway to Norway."

And why not? The unifying force of 55 TANDBERG video systems overcomes even the most extreme geography. It allows partner institutions like Inverness College UHI, Perth College UHI and Moray College UHI to fill their course catalogues with video offerings from one another's star lecturers. Popular courses offered over UHI's infrastructure of optical fiber and microwave transmitters include culture, tourism, the environment, local history and business administration. The colleges also rely on UHI to serve 70 small outreach-learning centers across northern Scotland.

The workhorse of UHI's video network is the versatile TANDBERG 880 set-top unit. Also contributing are the desktop TANDBERG 150, the roll-about TANDBERG 2500, the elite TANDBERG 6000 and the TANDBERG Director multimedia presentation system. All are administered centrally from Shetland College UHI, in Lerwick, by way of the web-based TANDBERG Management Suite.

"Our first-year cultural studies course goes out to 11 sites," says Bob Brandie, UHI's Senior Videoconferencing Technician. "Orkney College UHI is the lead partner, but lecturers in Shetland and Inverness contribute as well. They are very imaginative in making the course interactive."

When the first dozen video communication systems were rolled out in 1997, they were used primarily for administration. Today, 75 percent of all video communication at UHI is for teaching. Mr. Brandie says the number of monthly video lessons and meetings has doubled from 174 in 2002 to 333 in 2005.

UHI lecturers, students and administrators say the TANDBERG systems are simple to use — an important factor given the partnership's decentralized structure. Even adult students in remote crofting hamlets or fishing villages have little problem learning to interact by video with their teachers and classmates. "Part of the evaluation process for students covers their ability to use the document camera or laptop in making a video presentation," says Mr. Brandie. "The competence they gain in videoconferencing is a major plus for them in the job market."

Pete Tipler, a student at Orkney College UHI says that: "As an educational tool, the TANDBERG network is limited only by the imagination and presentation skills of teachers. The equipment has been a pleasure to use and an incredible asset to studying in the Highlands and Islands. Without it, the college would certainly struggle to run some of its courses."

Australia - James Cook University

In tropical Queensland, Australia, James Cook University in Townsville and Cairns has been using TANDBERG videoconferencing since 2000 to link its campuses and reach the outside world

Posted 31 October 2005. In the 1770s, Captain James Cook sailed every ocean and changed the map of the world more than anyone before or since. It is fitting that James Cook University (JCU) (www.jcu.edu.au) in tropical Queensland, Australia, sees itself in global terms. (Over a million visitors come each year to experience two World Heritage listed natural wonders of Queensland: the Great Barrier Reef and the rainforests of the Wet Tropics.)

Neither the vast space between Australian cities nor the oceans encircling the continent keep JCU from participating fully in the wider world. In fact, the university makes a virtue of remoteness by leading the world in rainforest and oceanographic scholarship.

TANDBERG does what it can to help. JCU's embrace of visual communication has turned its two main campuses — Townsville and Cairns — and several smaller campuses into a single learning environment. Students and professors enjoy access to additional resources in Sydney, Melbourne and the rest of the world via Australia's Academic and Research Network (AARNet).

"Some days we do 50 hours of videoconferencing," says Gary Gulliford, Manager of Videoconferencing and Audio-Visual Services. "Each campus has access to the expertise and natural wonders that are unique to each other campus. For students, the video experience keeps getting more immersive as we add peripherals and projection systems. To ensure a high-quality experience we use high bandwidth. The TANDBERG equipment has tremendous flexibility, efficiency and capability."

Spread among the James Cook campuses are 16 dedicated videoconferencing rooms and lecture halls, each with up to three large screens and data projectors. Since switching to TANDBERG in 2000, James Cook has become a model for maximizing the educational impact of visual communications.

"Cairns is a newer and smaller campus, and a lot of its class sizes are not very big," says Mr. Gulliford. "The only way to offer certain nursing courses there is by videoconferencing. The same is true for some of the language courses, like French and Japanese. Some of our lecturers spend a week at Townsville and then a week at Cairns, so the two groups alternate being at the 'far end.'" Nursing lecturers frequently use DVD's, X-ray slides and even 3-D objects such as Petri dishes to enliven their video presentations.

John Gray, Associate Dean of the Faculty of Arts, Education and Social Sciences says: "Multi-screening is what it's all about. The freedom it gives you is absolutely exhilarating." He says teachers who take a creative approach to videoconferencing can improve their teaching skills dramatically. It's good to dazzle students visually, he says, but more important is the simple act of designing lessons from the students' perspective. "With videoconferencing — at least the way I do it — the students at both ends get better grades. It gives me a larger battery of teaching techniques, and I make use of them all!", he concludes.

High-bandwidth videoconferencing lends itself particularly well to one of James Cook University's specialties: the natural sciences. "The Cairns campus is located right in the rainforest, so students there can walk out of the classroom and trap a snake or some rare insect to show their classmates in Townsville," says Mr. Gulliford. "The document camera, you know, is great for 3-D objects. I've seen frogs being dissected as well as insects. The screen gives you all the magnificent colors of the insect and a detailed view of its legs, segments and antennae."

In language instruction, audio quality is crucial, especially when conveying the nuances of Asian languages. "The sound that TANDBERG provides is excellent," says Mr. Gray, who teaches Old English to 40 students in Townsville and 15 in Cairns. To get his classes interacting by videoconference, he warms them up with chanting exercises and a quiz game. During the lecture itself, Mr. Gray holds interest by changing tack five or six times, introducing peripheral inputs and surprise camera angles. Not all teachers are so zealous. But even the technology-shy ones generally surprise themselves.

The university's TANDBERG 550, 800, 880 and 2500 videoconferencing units, with their simple remotes and integrated AMX control systems, give teachers unexpected new powers — often to the amusement of the technical support staff. "Once they've done it for a while, they start approaching us and saying, 'Can we have this?' 'Can we have that?' They become bandwidth hungry," says Mr. Gulliford. "Some of them become power users of the technology, and no matter how outlandish their requests, we pass them on to TANDBERG. And you know what? TANDBERG takes them very seriously.

Italy - Piemonte University

Piemonte University, Italy, establishes a Telemedicine and Distance Learning Program for Nursing and Physiotherapy with RADVISION's viaIP Videoconferencing MCU and ECS video network management

Posted 25 March 2004. Universita degli Studi del Piemonte Orientale, or Piemonte University, is a prominent institute of higher learning headquartered in Novara, Italy. The University has campuses and associated hospitals around the country. In order to offer its own staff on-site professional training courses for nurses and physiotherapists it chose videoconferencing. The courses are integrated with University degree programs.

The University needed an interactive system that was of such high quality that teachers and students would conduct themselves as if they were in the same classroom. The videoconferencing system would also have to be able to accommodate standard classroom teaching aides such as static slides, video, or live feeds from diagnostics or operating theaters.

Piemonte University invited HS Digital to design and implement the videoconferencing network for the teledidactic program. The video network consists of 13 Polycom ViewStation endpoints. Many lessons are supported by PowerPoint presentations, slides or films on medical subject matter. It was critical that the instructions and explanations are perfectly coordinated with the images displayed. After conducting a series of tests, the team at Piemonte University chose RADVISION's viaIP MCU and ECS video network anagement system as the network infrastructure required.

Although the initial program called for only four sites to participate, the University wanted a solution that would accommodate later expansion of the network. The teledidactic program offers four concurrent courses at three locations. The professors are located at the main University campus in Novara and students are in Biella, Alessandria, and Verbania.

The courses are for first, second and third year nursing students and first year physiotherapy students. Each videoconference lesson runs every working day from October to July. Through the program, the University is able to accommodate over 200 participants in each of its courses. Without videoconferencing, these courses would normally be inaccessible to most of the students at remote locations. The university is now extending this program to radiographers, lab technicians and other medical students.

USA - Texas Tech University

Rural counties in Texas connected to world-class Texas Tech University through Polycom's ClassStation, ViewStation, VS4000 and iPower

15 October 2002. Texas Tech University, a public research university with its main campus in Lubbock, Texas, has deployed Polycom's ClassStation(tm) interactive video communications solution to facilitate its state-of-the-art distance-learning program.

ClassStation integrates all of the software and hardware components integral to a comprehensive video communications-enabled classroom into one easy-to-install and easy-to-use system. The university is also using Polycom's ViewStation(r), VS4000(tm), iPower(tm) and MGC Video Multipoint Control Unit (MCU) and Gateway for its IP video communications needs.

Texas Tech University, the largest university system in West Texas, provides education and support to 27,500 students. Texas Tech is the only university system in the state with a comprehensive academic institution, law school and medical center located on one contiguous campus. Research, teaching and learning are the missions of the institution. Students select from 150 undergraduate, 100 master's and 50 doctoral degrees offered by the university.

Degree subjects range from the fine arts and humanities to engineering, from business to physical sciences, from law to architecture, from the health sciences to financial planning and from restaurant and hotel management to education. The Texas Tech University System prides itself on excellence in teaching and research.

"When Texas Tech began its migration from ISDN to IP video communications, we required that our vendor have the best IP video solution in the industry and that they act as a strategic partner with Texas Tech," said J Stalcup, Texas Tech director of telecommunications. "Not only did Polycom meet these requirements, they've exceeded our expectations. Polycom's ClassStation combines all of the features critical to distance-learning success and its ViewStation, iPower and Video MCU products are the best IP conferencing products on the market. Polycom's video communications products have helped enable one of the most robust distance-learning programs in the state of Texas and the company continues to act as our strategic partner."

In addition to leveraging interactive video communications to deliver distance learning across a wide range of undergraduate and graduate-level classes, Texas Tech also instituted a program called the Hill Country Initiative to reach students located in the rural Hill County near Austin.

Through Polycom's ClassStation, the Hill County Initiative give students who are not located near a Texas Tech campus access to the school's faculty. The uSniversity also uses video extensively in its College of Education, allowing its students working on teaching credentials to observe k-12 classroom behavior before they begin student teaching, helping them enter the classroom better prepared.

"We've seen tremendous response to our ClassStation offering not only from the traditional K-12 and college users, but also business, tele-health, continuing education and training

applications of all kinds," said Craig Malloy, senior vice president and general manager of video communications for Polycom. "We're extremely pleased that a distinguished university like Texas Tech is leveraging the complete, integrated video conferencing experience that the ClassStation offers as well as additional video solutions that span our product line to achieve their distance learning goals. We look forward to a continued successful partnership with Texas Tech."

China - China Academy of Sciences

The China Academy and Sciences (CAS) uses 100 Polycom video conferencing systems to link Chinese academics and researchers in the natural and technology sciences

4 August 2004. China is developing a world class IP communications network to support the world's most populous nation. IP delivers more reliable, higher quality voice and video at lower cost as a result of Polycom IP rich media solutions deployed.

The China Academy and Sciences (CAS) uses 100 Polycom video conferencing systems and two MGC-100 bridges to connect the Beijing government agency with 12 of its branch offices across 20 cities.

Leading Chinese academics and researchers in the natural and technology sciences are able to share information and collaborate using the nationwide video conferencing network, making for faster decision making and more effective use of resources are cited as the primary benefits of the system.

Great Britain - Hull York Medical school

The Hull York Medical School is located on campuses of the University of Hull and the University of York 40 miles apart; but they share lectures, even jokes, using TANDBERG videoconferencing systems

Posted 27 September 2004. It is true that the University of Hull and the University of York are 40 miles apart. But their medical students manage to attend the same lectures at the same time. They even take turns asking questions of the professor. When a lecture is over, students in Hull and their fellow students in York often exchange remarks and wisecracks before returning to their physically separate worlds. "This is something new," says Giles Davidson, Head of Administration at the Hull York Medical School (HYMS).

The prestigious medical school's remote halves are bound together by powerful TANDBERG videoconferencing systems. "We are one school, with 65 students at Hull and 65 at York all studying for the same degree," says Dr. Davidson. "The video link is crucial to giving everyone the same experience. We want them to feel like a single class — and they tell us that it works."

Each half of the school, which opened in 2003, has a specially designed lecture theater with two large projection screens, several cameras, confidence monitors and a profusion of high-quality microphones and speakers to provide a learning environment worthy of the high-bandwidth link between Hull and York. Medical theory and practice are conveyed in all their drama and visual subtlety.

"We're talking about a complex array of audio-visual equipment," says Alistair Holdoway, managing director of Video South, the TANDBERG partner that installed the system. "Yet with the touch-screen control panel it's all very simple to operate. The lecturers do it by themselves."

The dual-campus arrangement sprang from the UK National Health Service's urgent need for new, well-trained doctors. The idea of using videoconferencing to unite two campuses gained credibility when administrators visited an advanced lecture-hall scheme at the University of Edinburgh. Designed by Video South, it featured TANDBERG's rich multimedia videoconferencing technology with standard Duo Video and echo cancellation features. During that visit the HYMS administrators saw their own two-track future.

The students at the HYMS say using videoconferencing makes us feel more united as a medical school, rather than like two separate universities; we like this use of up-to-date technology

At the Hull York Medical School, the centerpieces of each term week are the plenary sessions, attended by all students in their own campus's videoconferencing theater. They never know until the session starts whether the lecturer will be in Hull or York, and by most accounts it hardly matters. When asked where a previous lecture originated, many students cannot even remember.

"I like it," a student wrote in a recent survey. "It's a great way for the two universities to combine and interact. It is also a means of ensuring that the level of teaching in plenaries is the same across the two sites. The technology is innovative and up-to-date."

Early video lecturers at HYMS included the editor of the British Medical Journal and the President of the Royal College of Physicians. The daily plenary sessions improved as presenters began making full use of the TANDBERG 6000 codec capabilities that anchor the system at each end. The unique Duo Video feature allows lecturers to keep an image of themselves on one screen while displaying high-resolution Power Point slides, medical X-rays, documentary videos and other computer inputs on the second screen. Sophisticated video scenarios and room environments flow automatically from a touch of the control panel.

"Quite a few students have mentioned that they came to us specifically because we are a technologically innovative school," says Jean McKendree, Learning Resources Manager at HYMS. "They want to be on the cutting edge, and we offer them an entire Virtual Learning Environment. The video link is a mission-critical part of the package."

Some of the students are so taken by the videoconferencing system that they volunteer to help run it. With them at the controls, plenary sessions are often introduced with the pulsing theme music of a popular medical TV drama. "We've had a good start," says Dr. McKendree. "Now we need to think about how we can do more."

Can one quantify the effect of such an investment? Well, the number of applications for entrance to Hull York Medical School in 2004 was 50 percent larger than in the school's opening year. The applicant pool — 1,700 applicants for 130 new spots — already exceeds that of some conventional medical schools with twice as many students.

Great Britain - Open University library

The new Library at The Open University's headquarters in Milton Keynes, UK has deployed a MediaStar TV distribution and videoconferencing system from Cabletime on CAT 6e cabling

19 July 2005. The new Library at The Open University's main campus headquarters in Milton Keynes, UK had an eye on the demands of future technology when it recently deployed a MediaStar TV distribution and video conferencing system from Cabletime.

With CAT 6e cabling already installed in the Walton Hall HQ, The Open University was looking for a solution that could deliver TV, video, presentations, videoconferencing and radio across its network, and which could also offer the Open University some degree of future-proofing as its requirements changed.

The Open University specified the MediaStar Pro from Cabletime, which is designed to work on Cat5/6 structured cabling with the facility to run video, audio and IR codes on a single cable. The system was installed by CTL AV.

The Open University Library has meeting and presentation rooms as well as public areas and a cafeteria. The system needed to be flexible so that, for example, a group of students could be accessing one of the huge archive of OU programmes on DVD or video in a meeting room, whilst the reception area was displaying BBC News 24.

In order to provide this flexibility, CTL installed two MediaStar hubs with 40 input sources, from which the OU can select channels including all the terrestrial stations, Sky and other digital and satellite channels. The signals are being displayed on a range of output devices including projectors, LCD screens and plasma displays.

The only complete solution for professionally managed multi-channel video and audio delivery, MediaStar Pro offers zero-LAN-impact, 100/200 TV channel capacity, unlimited users, use of existing Cat5/6/7 infrastructure, total control of all users viewing rights, IP/RS232/RS485 control and SNMP monitoring and IR remote control.

Mary Hunt, Project Manager at the OU Library said: "Initially we used the system to display presentations, stream video or deliver news and we are now starting to use videoconferencing. We plan to use video over IP in the near future."

As well as the TV distribution facility, the OU can also use MediaStar's multipoint video conferencing facility which enables up to six people to meet at any one time, and allows students and lecturers to make face to face contact with other Open University sites.

Mike Bell at CTL AV, said: "The MediaStar system that was installed at The Open University Library is flexible enough to provide a range of functions, depending on the individual user. We were happy to use MediaStar because it is proven technology that works on structured cabling.

The next stage for The Open University will be to add MediaStar Evolution, Cabletime's latest addition to the MediaStar family. Evolution has been designed to take advantage of the

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other spor	llations throughout the ts venues and shopping pedigree has been lor	g malls, as well a		

The Netherlands - Erasmus University

The Rotterdam School of Management at Erasmus University in the Netherlands uses TANDBERG video conferencing to enable students in other locations to join groups undertaking group case studies

Posted 31 May 2004. The Rotterdam School of Management is part of Erasmus University in the Netherlands. The School has built up an excellent reputation, both at home and abroad, over a 25-year period. Programs offered by the School of Management are based on a well-founded teaching philosophy in which innovation plays an important role, including the intrinsic use of information and communication technology.

Videoconferencing was installed at the Rotterdam School of Management at Erasmus University for the first time in spring 2001. This move came as a result of a new IT plan in which videoconferencing plays an important role. The School recognised that it had essential for universities to introduce teaching methods that capture the interest of new and existing students. Videoconferencing is one way of Erasmus achieving that goal using TANDBERG systems.

The Faculty at the Rotterdam School of Management makes extensive use of group-based case studies in courses. Using videoconferencing, students are enbled to work on a case study with students at other locations and universities. The school has found that the use of videoconferencing in a classroom situation has become more and more important; for them, distance learning over video means that time differences and distances become irrelevant. It also enables the extensive use of guest lecturers located at another site in their teaching programme.

The School of Management has many exchange students. During special orientation days, videoconferencing is used by students in their search for an internship with a Company. The first meeting between a company and each student takes place over videoconferencing. This is an excellent way for both parties to discuss the opportunities and requirements involved in the internship. The visual aspect is very important in allowing both the student and the company to gain a true first impression of each other.

For the companies, it is much easier to make a decision on the basis of a videoconferencing meeting than through a telephone interview or by looking at a CV. The ease of use of TANDBERG systems has been an essential element in the success of this initiative as every student is expected to use the systems without any prior training.

USA - Notre Dame

The University of Notre Dame has standardized on Polycom's MCU and its ViewStation(r) endpoints for distance learning on its Executive MBA program

June 2002. The University of Notre Dame has standardized on Polycom's industry-leading ViewStation(r) video communications systems and Video Multipoint Control Unit (MCU) to facilitate its Executive Education programs. Notre Dame's prestigious Mendoza College of Business is able to deliver its Executive MBA program well beyond its campus location in South Bend, Indiana through the use of interactive video communications,

The school has deployed Polycom's ViewStation and VS4000(tm) endpoints in its remote and on-campus classrooms and uses Polycom's Video MCU to connect the sites to the main campus. The school currently offers classes in states throughout the Midwest. "Our Executive MBA is an intensive, fast-paced program and our executive students are in demanding careers," said Leo Burke, associate dean and director of executive education at Notre Dame's Mendoza College of Business.

"This requires the technology we use to deliver the program to be of the highest quality and extremely reliable. Polycom's systems have played an integral role in expanding our Executive MBA program and enabled us to offer a meaningful and seamless educational experience to a broader audience of adult students."

"Polycom is honored to be recognized by such a prestigious institution and we are proud that our video communications technology has had such a positive impact on Notre Dame's distance learning programs," said Michael Baker, senior director of vertical markets for Polycom. "By leveraging the power of interactive video communications, Notre Dame's Mendoza College of Business has significantly expanded the reach of its Executive MBA program. It's exciting to play a part in enabling such a dynamic distance-learning program."

The Polycom's ViewStation delivers the quality and performance of high-end videoconferencing systems at an affordable price. Available in a broad product range, including ViewStation FX, VS4000(tm), ViewStation MP, ViewStation 128, ViewStation SP128 and SP384 and ViewStation H.323, the product sets the standard for high-performance, affordable and easy-to-use interactive video communications.

Polycom's Video MCUs provide the most advanced features of any MCU. It's features make the remote meeting experience more like a face-to-face meeting. Continuous presence of up to 21 different layouts can be changed "on the fly".

Multi-way transcoding allows sites with different frame rates, connection speeds, audio algorithms, resolutions, and network protocols to transparently connect with one another.

Polycom's line of MCUs, gateways and firewall gateways are the first to receive Checkmark Certification, providing users a secure means of deploying IP-based voice and video communications without compromising firewall security.

The University of Notre Dame is located in South Bend, Indiana. Since its founding in 1842, the University of Notre Dame has grown steadily in reputation as one of the country's leading institutions of higher learning. The University's founding principles centered on ethics, intellectual exchange, and a commitment to research and teaching, are world-renowned. The University and its Mendoza College of Business are regularly ranked among top institutions in a variety of important areas including ethics, leadership potential, accountancy, information technology resources and long-term return on investment. Notre Dame's Mendoza College has met the executive education needs of major multinationals, mid-size corporations and non-profit entities since 1982. More at http://executive.nd.edu

Africa - African Virtual University for Teacher Training, 15 Ajman University of Science & Technology, Australia - Central Queensland University, Australia - Edith Cowan University, 11 Australia - James Cook University, 24 Brazil - University of Northern Parana, 17 Cambridge University, 5 China - China Academy of Sciences, 29 First Video Communications, 4 Foreword, 2 France - Groupe des Ecoles des Mines, 18 France - Picardie Universities, 13 FVC, 4 Great Britain - Cambridge University, 5 Great Britain - Hull York Medical school, 30

Great Britain - Open University library, 32 India - Xavier Institute of Management, 19 IP, 32, 33, 35 ISDN, 10, 13, 20, 27 Italy - Piemonte University, 26 Japan - Gifu University, 21 Polycom, 20, 21, 27, 28, 29, 35 satellite, 17, 22 TANDBERG, 5, 8, 22, 23, 24, 25, 30, 31, 34 The Netherlands - Erasmus University, 34 United Arab Emirates, 4 United States - Case Western University, USA - Notre Dame, 35 USA - Texas Tech University, 27