

***Best Practices for Video- and
Collaboration-Based Distance
Education in China***

***Opportunities for Distance
Learning and Training
Programs Within and Across
the Great Wall***

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*Opportunities for Distance Learning and Training Programs
Within and Across the Great Wall*

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Best Practices for Video- and Collaboration-Based Distance Education in China

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Executive Summary

Education and its role in personal achievement and national development have been recognized in China society for over 1500 years. While the need for education at all levels of society has only increased since China established its Imperial Examination system during the Sui dynasty (580-618 AD), the tools and methodologies available for instruction have changed rapidly over the last decade. Nowhere is this more apparent than in the field of distance learning and remote training. The advent of the Internet and rich media collaboration technologies has created more options for both self-paced and interactive learning across vast distances. This white paper examines how and why video- and collaboration-based technologies are used for distance learning and remote training in China and is intended to be a resource for programs that want to [more] successfully integrate videoconferencing and collaboration into their instructional mix or to link with other programs already using these tools.

In the course of analyzing the Chinese market for education-related videoconferencing, Wainhouse Research has identified a number of successful programs, most notably Fudan University and Fujian Normal University (described later in this white paper). From these programs we have derived some “best practices” for the Chinese educational user, as a guide to how to build a program of one’s own. And by describing these networks, our goal is to empower western organizations seeking an understanding of how to work with Chinese educational users.

Wainhouse Research believes that the outlook for video collaboration for educational purposes in China is quite positive. Primary underlying factors include:

- Thriving video users at leading educational institutions
- A variety of programs and constituencies, including international research collaboration, educational cooperation, professional training, and online degree programs.
- General economic, social, and human resource development trends that fuel demand for education, training, and exchange.

The promising application areas for video-enabled training and exchange are:

- Local government officials needing to be trained in new skills as well as being updated on policies and procedures, etc.
- Professional development, as a burgeoning Chinese middle class seeks self-improvement through training and education.
- Financial services, where employees of banks and insurance firms need up-to-date, just-in-time training.
- Energy services, where China’s high profile as a consumer of oil and gas is causing it to extend its reach throughout the globe in joint resource development programs.
- Language training—primarily as a consumer of English as a Second Language (ESL) training and a provider of Chinese as foreign language training.
- IT training.
- Teacher training.

We hope that this white paper serves as a catalyst for identifying how these tools may or may not fit into the methodologies or goals of a program, and that it serves to ignite new opportunities for deployments and for international exchanges.

Best Practices for Video- and Collaboration-Based Distance Education in China

Overview

This white paper is intended for those in China building videoconferencing and collaboration-inclusive distance education networks wishing to learn about factors for success, and those in the west wishing to understand better how to work with Chinese educational networks. With close to 1,396 institutions of higher education, and as an early adopter of advanced IP network technologies, China is a natural breeding ground for distance education. And like some of the other early adopters of the 1980's and 1990's (e.g. the U.S., Canada, and Australia), China is a large country with much ground to cover and many rural locations in need of educational options. Rapid economic development over the last 20 years has led to China becoming the second largest national economy in the world (as measured by Gross Domestic Product) and an important trading partner for both developed and developing economies. As it continues its economic and cultural opening up, many additional reasons exist why Chinese institutions increasingly will become interested in programmatic links and exchanges with organizations elsewhere and vice versa. One key factor that seems not so much a matter of differentiation as of distinction: China as an ancient, highly *visual* culture, appreciates the art and science of *seeing*, as is also the case in other cultures with "high context" communication styles. High context refers to the tendency to take more environmental variables such as relationship, history, gesture and tone into account when interpreting a conversation. In other words, the Chinese understand that *understanding* can be derived best from seeing, sizing up, appraising, and that decisions are best made with an extra bit of insight that only the visual may provide.

In the course of analyzing the Chinese market for education-related videoconferencing, Wainhouse Research has identified a number of successful programs, most notably Fudan University and Fujian Normal University (described later in this white paper). From these programs we have derived some "best practices" for the Chinese educational user, as a guide to how to build a program of one's own. And by describing these networks, our goal is to empower western organizations seeking an understanding of how to work with Chinese educational users.

With some 1400 institutions of higher education, and as an early adopter of advanced IP network technologies, China is a natural breeding ground for distance education.

Distance Learning Programs in China

Education, as a public good, is still broadly directed by the central government in China. Distance learning development and supervision falls under the jurisdiction of the Ministry of Education (MOE), which has rolled out 3 major waves of “modern” distance learning initiatives. University-based distance learning programs were formalized in the second phase when the MOE initiated the Modern Distance Learning Engineering project in 1998, which allocated funding for equipment and program development and established policies for online schools, including approval processes. Some 68 distance learning programs, based on the second phase, existed as of the end of 2004. These programs use a mix of technologies, including (in various combinations) streaming media, multimedia CDs, broadcasting, videoconferencing, and site-based tutoring to supplement online readings, forums, and chats. The top programs combine self-paced online learning with site-based instruction provided locally or via videoconferencing.



Figure 1: Distribution of Universities Approved for Distance Learning Across China

But distance education in China is not just about universities and schools. Like some of the other early adopter nations, governmental and corporate *training* needs – engines of commerce – are fueling adoption of various types of online training and videoconferencing-based training. Practitioners consist not simply of educational institutions, but also of trainers in government and corporate environments. The needs of all three types of institutions do not exist within “silos,” but instead are encouraging cross-pollination between the three sectors. Thus not only educators outside China should be interested in exchanges with China, but also non-governmental organizations (NGO’s), other governments, and corporations, which all have a stake in delivering educational content/training into China. While the focus of this white paper is on educational users, the drivers (or reasons for adoption) are many and this paper should be read with the thought that corporate, governmental, and NGO users are capable of being included in the discussion.



Figure 2: Cross-Pollination and Overlap across Distance Learning Programs

Trends and Drivers for Videoconferencing

According to our interviews with educational, governmental, and corporate program organizers, videoconferencing is utilized in China for the following reasons:

- The best teaching resources can be spread over several remote locations.
- Real-time face-to-face interactivity between instructors and students increases satisfaction on both sides of the desk.
- The need exists for flexible, ad hoc content creation.
- The ability to record sessions for broadcast and substitute broadcast sessions with live conferences is appealing.

China's instructional method is traditionally teacher-centric and most students prefer to have a face to face teaching component to their distance learning programs. Teachers are highly respected and the relationship between teacher and student is one that tends to be honored over time, thus the visual component is a natural in a society that, relative to elsewhere, is somewhat hierarchical. The visual adds trust and it is hard to imagine at this time a student enjoying a mentoring relationship with a teacher in China *without* some sort of visual element.

A tremendous need exists for continuing education and training. In fact, some evidence exists that videoconferencing is favored as part of corporate training programs (unlike in the west, where online and self-paced training tools have been the norm), as a natural transition from on-site training meetings or traveling trainers to asynchronous, self-paced materials. As shown in the diagram below, incorporating videoconferencing into a remote learning program can be one way to balance the level of interactivity with the desire to use expert knowledge as efficiently as possible.



Figure 3: Interactivity Continuum for Instruction Methodologies

A close look at the most common applications for videoconferencing within government bureaus and enterprises indicates that a significant amount of remote training takes place. Anecdotal evidence from our interviews and other sources suggests that it is reasonable (and conservative) to estimate 10% of government and 15% of enterprise conferencing usage is likely to be dedicated to training.

Key areas likely to be strong targets for use of videoconferencing in education and training are:

- Local government officials needing to be trained in new skills as well as being updated on policies and procedures, etc.
- Professional development, as a burgeoning Chinese middle class seeks self-improvement through training and education.
- Financial services, where employees of banks and insurance firms need up-to-date, just-in-time training.
- Energy services, where China's high profile as a consumer of oil and gas is causing it to extend its reach throughout the globe in joint resource development programs.
- Language training—primarily as a consumer of English as a Second Language (ESL) training and a provider of Chinese as foreign language training.
- IT training.
- Teacher training.

Initiatives of Note and Interest

Various initiatives or activities within or external to China carry specific opportunities for videoconferencing as a medium. These include the following:

- Major new initiatives are being launched to promote rural education through distance learning – with \$120 million promised from various governmental budgets over the course of the next few years.
- Pan-Asian (and inter-hemispheric) cooperation and exchange is increasing dramatically. Due to cultural similarities and proximity/ time zone advantages, exchanges with Singapore, Japan, Taiwan, Korea and SE Asia are welcomed by research and study programs. As an example, the Organization of Pacific Rim Universities meets via video regularly and hosts an annual event focused on Distance Learning and the Internet. Information is available at <http://www.apru.org/activities/aprunet/>.
- Two major annual events are now available for distance education: the Distance Learning Convention of China (<http://www.chinaonlineedu.com/meeting>), which is a conference, and the China Higher Education Equipment Expo. Program leaders increasingly participate in Pan-Asia events such as this year's combined Conference on Research in Distance and Adult Learning in Asia (CRIDALA 2005) / Conference on Distance Education in China (<http://www.ouhk.edu.hk/cridal/cridala2005/>), which will take place in Hong Kong in December of 2005.

- China's Education and Research Network (or CERNET), which is a central figure in the deployment of technologies for education over the Internet. The network reaches more than 1,200 universities and directly links to other networks in places including the US, UK, Hong Kong, Korea and Japan. Relevant initiatives and programs include:
 - The IPV6 Pilot program, CERNET2, launched December of 2004. This experimental network connects 25 universities in 20 cities. Funded as part of the China Next-generation Internet (CNGI) project, the goal is to become a first mover in the next-generation Internet. CERNET is active in the Asia Pacific Advanced Network (APAN) consortium (<http://www.apan.net>) and its annual Summit.
 - CERNET video lab, which is a test bed for running video over the Internet. The video lab functions as a resource for all programs implementing video applications on the network. The video lab has developed its own videoconferencing software based on the Access Grid developed by Argonne National Labs (www.accessgrid.org) and also helps to establish best practices and guidelines in the community. In addition to its research and development role, the video lab acts as an informal facilitator for establishing links between universities and frequently hosts videoconferences.
 - CERNET network services (www.cernet.com) acts as an ISP for educational customers connecting to the CERNET backbone. Access services include dial-up, broadband, and dedicated high-capacity hook-ups over satellite or land-based IP networks. In addition, CERNET provides network design and integration services and intends to develop a variety of value-added services for the educational community.
- International aid organizations are becoming increasingly influential players in China. They are valued partners in many government backed initiatives, as much as for expertise as funding. Some examples of organizations currently involved in programs connected with distance learning in China include:
 - The World Bank has extended its Global Development Learning Network (www.gdln.org) concept to more than a dozen videoconferencing-enabled sites across China. The program allows the sites to receive training courses from both inside and outside China as well as to exchange experiences with colleagues around the world.
 - The Canada International Development Agency is working with the Chinese Ministry of Education's National Centre for Education Technology to implement the *Strengthening Capacity in Basic Education in Western China (SCBEWC)* project, which provides assistance in Western China through the delivery of teacher education. The program combines a broadcast distance education model with Student Centered Instruction, and has a goal of enabling both capacity building and the development of curriculum sensitive to gender and ethnicity (<http://www.ncet.edu.cn/cida>).

- The Center for Environmental Education and Communications (CEEC) works with government and non-government organizations to produce educational and training materials for the public, school, and corporate sectors in China. Initiated by the State Environmental Protection Administration of China, CEEC also participates in international environmental training initiatives, such as the World Resource Institute's Business-Environment Learning and Leadership (BELL) project. Additional information is available at <http://www.chinaeol.net/en/>.

These are just a few examples of the many domestic and international initiatives that offer promise for videoconferencing-based education. They point to some of the ways in which western educational organizations can work with Chinese programs.

Why Successful Programs Have Been Successful

Later in this white paper we discuss two key programs that illustrate how to do distance education in China. Based on many interviews, Wainhouse Research sees a pattern of success factors that are found among most successful networks. A few of the reasons that these programs have been successful include:

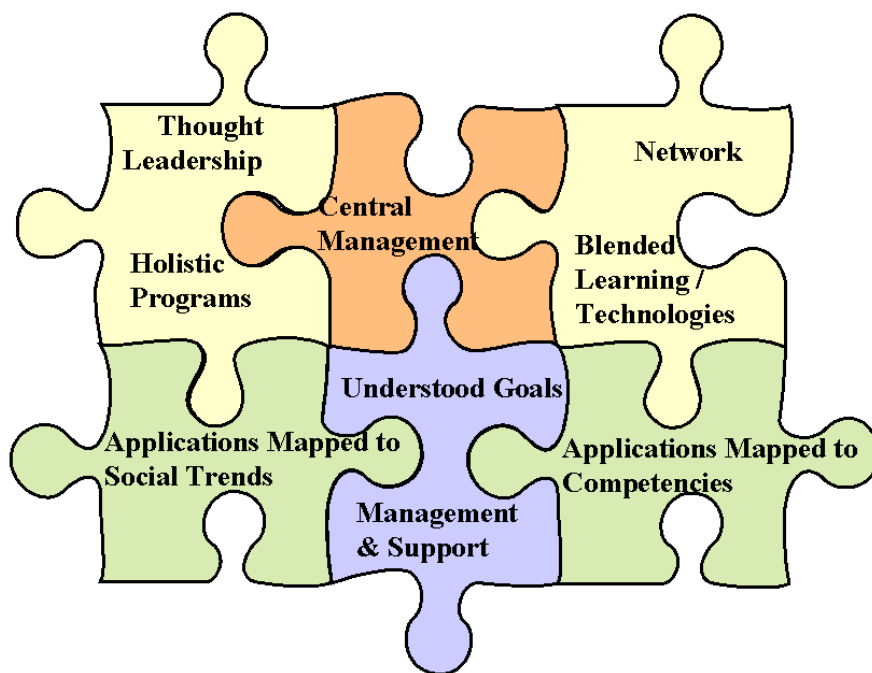


Figure 4: Putting the Pieces Together to Create a Successful Distance Learning Program

- **Blended learning, blended technologies** -- The successful programs we interviewed do not use videoconferencing in a vacuum; instead, it is one of a set of tools. They recognize that videoconferencing is not an end in itself, but part of an overall suite of tools and applications that may include online course materials, multimedia CDs, online forums and discussion groups, web conferencing, email, and on-site tutoring.
- **Thought Leadership and High Profile Initiatives Can Translate into Success** -- Support from an institution is critical, but beyond that, the most successful programs may be those that have the highest profile and/or that are in a position to be *thought leaders*. In other words, the successful programs found ways to distinguish themselves through various innovative programs. They “jump-started” themselves not simply by planning sets of classes to be taught, but by creating ties to industry and government domestically and internationally. This often led to *events* that brought the programs great prestige.
- **Applications that Match Core Competencies** — Fujian Normal University’s NEC (described later in this document) is built for distance education, but has found success through focusing on certain core competencies. One of those core competencies is teacher training – a major initiative of the China MOE. Thus it created a program with teacher training as the “anchor,” the central focus as it were, and with that program successful, began to build new applications and find new subjects around that focus.
- **Applications that Address Larger Social/Cultural Trends** – Part of Fudan University’s success is based on its location in one of China’s commercial centers and gateways to the west, Shanghai. Recognized internationally as one of China’s top universities, Fudan has utilized videoconferencing to develop relationships and exchanges much more efficiently than were it to rely solely on travel for face to face meetings. It is better equipped to attract and maintain prestigious partnerships with universities worldwide. *This has come at a time of increased trade and discourse with organizations outside of China, so Fudan has been especially adept at creating high profile events that leverage areas of topical interest (trade, international relations, world politics, and so on) as well as existing relationships with non-Chinese institutions.*
- **Understood Goals** – Every successful program we interviewed seemed to have clear goals, with plans to reach them incrementally over time. It is not unusual to find multi-year plans with expectations to phase in additional programs and initiatives over time, instead of trying to build a single huge network/program at one time.
- **Holistic Programs** — As in the west, the successful program in China includes full support from IT staff. This means more than simply ensuring that systems are available or that staff can launch meetings and class sessions. It means that videoconferencing is thought of as a tool for everyone, not just for the IT department or top administrators – and in the best cases, is woven into the workflow and toolset of the entire organization.

- **Central Management** —When videoconferencing resources are managed as a resource shared by all departments and programs within the school, they may receive wider usage for administrative, research, exchange, and educational programs. . At Fudan University, the general videoconferencing resources were separated from the dedicated distance learning videoconferencing systems, allowing them to be treated as a core resource and not marginalized.
- **Sufficient Network Infrastructure** – Most successful programs understand the importance of sufficient bandwidth and overall infrastructure. Because they were willing to spend the money to provision sufficient bandwidth from the outset, they were not hampered by inferior quality of service, lesser video quality, and uncertain ISDN connections.
- **Hands-on Management and Technical Support** — Many programs go out of their way to maintain adequate technical support and to train new instructors. Fujian Normal University videotapes professors to ensure that they grow comfortable with the technology and can improve their teaching methods.

Videoconferencing is perceived and used in China as an adjunct tool that is held in higher “esteem” than in the west, but that like elsewhere has its own applications and its own limitations. Just because the Chinese are a visual culture, it does not follow that anything visual will find a foothold here. Having said that, videoconferencing seems to be used in the successful educational organizations for both meetings as well as distance education, with no one application being privileged over the other. The fact that meetings are equally important echoes some western user behavior, but it also suggests a particular (and subtle) appreciation of the value of visual communications for everyday interactions.

Case Studies

Fudan University

Recognized internationally as one of the top universities in China, Fudan is celebrating the 100th anniversary of its founding. The University is composed of 17 schools offering a complete range of majors and disciplines across 67 undergraduate programs, 148 master's programs, 103 doctoral programs, and 22 locations for post-doctoral study. In addition, Fudan University is recognized as having 45 national key (outstanding) disciplines, 5 national key laboratories, 57 institutes and 80 research centers. Eight of the undergraduate programs have been designated as the national centers for basic scientific research and teacher training.

Videoconferencing products from Polycom, sponsor of this white paper, are used by both the distance learning program as well as the school administration. The central videoconferencing network is a resource shared by all departments and programs within the school. In 2002, Fudan video-enabled 14 conference rooms and classrooms around the campus as shared resources for academic programs and administrative use. As different sites serve different capacities and functions, each had a custom-designed audio / video system including audio and video mixing, displays, projectors, cameras, microphones, lighting, etc. Some room systems also included embedded MCU capabilities, which are frequently used for smaller conferences. Multimedia streaming is performed by servers in each location installed with customized software for recording, mixing and streaming multiple video and (T.120) data streams in one of several formats.

Videoconferencing has enabled Fudan University to develop relationships and exchanges much more efficiently than were it to rely solely on travel for face to face meetings. It is better equipped to attract and maintain prestigious partnerships with universities worldwide and can easily share the Fudan experience with the community outside the campus. Different programs and departments make more use of the facility than others. The office of international exchanges is one of its most frequent users. A sample of external conferencing partners includes:

- The Association of Pacific Rim Universities (APRU)
- The Ford Foundation (U.S.A)
- The World Health Organization
- The University of Waseda (Japan)
- Yale University (U.S.A)
- Sloan School of Business MIT (U.S.A)
- Nottingham University (U.K)
- Hong Kong University of Science & Technology School of Business
- Queens University (Canada)
- National University (Singapore)
- Olin School of Business Washington University (U.S.A.)

Utilizing this kind of technology also raises its profile in other ways. For example, Fudan University was able to provide special support for reporters to meet by video with high-ranking western diplomats in a variety of high-security, challenging situations.

Fujian Normal University

Fujian Normal University's "Network Education College" (FNU NEC) is one of China's top five distance learning institutions, with over 90 classroom sites and 28,000 enrolled students. Both degree and non-degree programs in Elementary Education, Business Administration, Computer Science, Law, English, Chinese Language & Literature, Political Philosophy, Educational Administration, Mathematics, and Teaching Chinese as a Foreign Language are offered. Instructional technologies include:

- Online course materials
- Multimedia CDs
- Online forums and discussion groups
- Email

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- Videoconferencing

By combining pre-packaged and online content with review sessions via videoconferencing, FNU NEC is able to provide a mix of self-paced learning and interactive face-time with first-rate professors for its students. Certified by the Ministry of Education to offer online courses in 2001, FNU NEC has steadily built its enrollment through new course development and expansion. Its network of sites reached from 14 at the outset to 68 locations across the province; 19 additional sites are located in 8 other provinces.

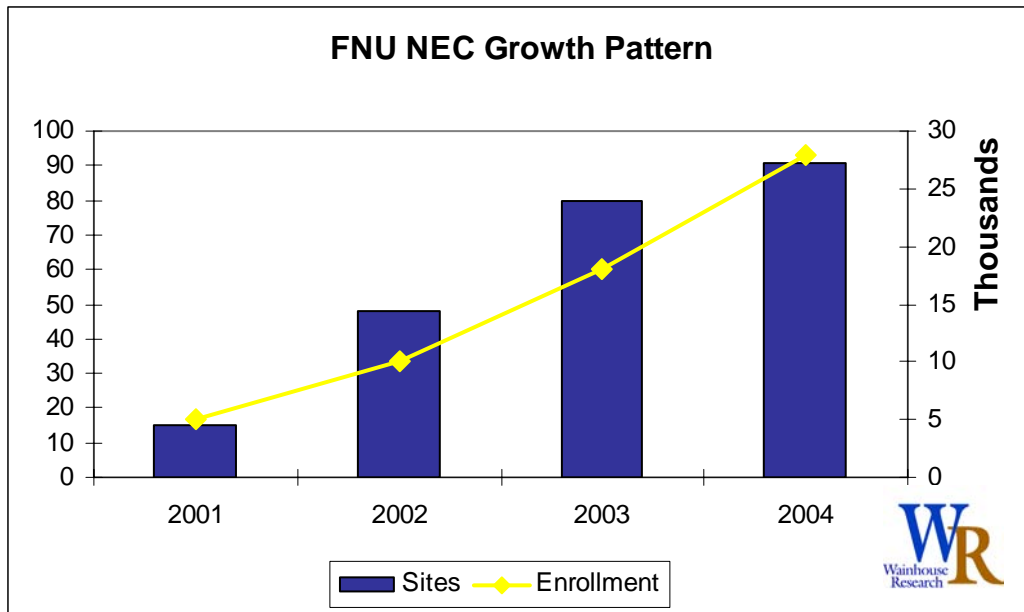


Figure 6 Growth of sites and student enrollment at FNU NEC

Partnering with local vocational and teacher training institutes provides FNU with a ready student base, facilities, and local administrative capabilities. Partners gain access to new course offerings from one of the best universities in the region and the ability to offer degree programs. As a normal university, FNU NEC focuses mainly on Teacher Education programs. Because of recent Ministry of Education mandates that all elementary and secondary teachers in China obtain a bachelor’s degree and that English language be taught at the primary school level, demand for continuing teacher education will remain strong throughout China. As its reach has expanded, feedback from local sites has also prompted FNU NEC to add courses in Computer Science, Law, and Business Administration.

FNU NEC logs about 50 hours per week of classes by videoconferencing. Each site is equipped with a Polycom (sponsor of this white paper) videoconferencing system as well as appropriate displays and audio systems. Teacher presentations are displayed simultaneously with the video through T.120-based data sharing on a PC. Sessions also can be recorded directly from the videoconference, allowing it to create new content on an ongoing basis. Content created either from a videoconference or in its production studios is then edited for future use.



Figure 7 FNU NEC Vice-President Cheng presents on distance learning strategies

FNU has its own MCU and generally has 7 to 8 sites in a session. All sites are connected by a dedicated IP network for videoconferencing to ensure quality of service. Sites outside the province are connected via satellite. FNU states that real-time face to face interaction provides a variety of benefits.

By combining videoconferencing with other distance learning technologies, FNU is able to strike a balance between delivering materials to remote locations for self-paced learning and creating a learning community. Relationships formed during university studies provide a network of peers and mentors throughout a person's lifetime. Attendance at video review sessions is recorded as part of the grading process, underlining the importance FNU places on this aspect of the coursework.

Tips & Resources for Global Connections

Although the case studies focus on higher education, they also illustrate the interconnectedness between government and education and even the private sector, and between the different levels of educational communities. Just as videoconferencing technology offers value at all levels in western organizations, including for primary and secondary schools, there is every reason for more Chinese schools to become video-enabled in coming years. This very visual culture is not alone in a common habit of building the technology and then seeking applications.

Chinese organizations interested in programmatic or ad hoc connections to western organizations should consider contacting one of a number of groups that function as hubs for helping schools build programs and find content. These include The Center for Interactive Learning and Collaboration (CILC), a not-for-profit, U.S.-based center dedicated to helping schools and cultural organizations create programs and find programs with useful content. The Center, one of the leaders in K-20 videoconferencing, can be reached at www.cilc.org and is available as a general resource for cultural exchanges, as well as a resource for building programs. Already it has begun to share its "Vista" initiatives with Chinese educators through face-to-face cultural exchanges. The Center also is a major supporter (as is Wainhouse Research) of the Keystone Conference (www.keystoneconference.org), an annual conference focused on best practices for videoconferencing and collaborative technologies in the classroom. The Global SchoolNet Foundation (www.globalschoolnet.org/index.html) also has initiatives reaching into China. And even China-U.S.

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Education conferences are springing up: (<http://globalinteractions.org/MultipleIntelligences/Intelligences-home.htm>).

Other materials that Chinese organizations may find useful in “navigating” their way into Western connections include a number of white papers available at the [Wainhouse Research](#) website:

- [Best Practices in Live Content Acquisition by Distance Learning Organizations](#)
- [Navigating the Sea of Research on Videoconferencing-Based Distance Education](#)
- [Super-Size Bandwidth and Two-Way Video in the Classroom](#)

These white papers offer an understanding of topics like how to best approach cultural institutions for content, how to assess research conducted thus far into the effectiveness of video, and the coming impact of Internet2.

Western organizations seeking links to Chinese groups will find that Chinese organizations have content to offer, and are eager for connections that bring information and learning into the country. Already many conferences have taken place or are scheduled to occur in coming months; as an example, the 2005 China – E.S. Education Conference, scheduled for July 19-22 in Beijing, is one of many examples of cooperation, dialogue and exchange already taking place both formally and informally. Similarly, vendors such as the sponsor of this white paper, Polycom, often have educational marketing staff that focuses on facilitating connections between users:

- Russ Colbert, Polycom Global Education Market Director, rcolbert@polycom.com
- Elaine Shuck, Polycom Education Market Coordinator, Elaine.shuck@polycom.com

For those in the West wishing to connect to China, note that typically such content should be of topical interest, and thus western organization seeking ties should look for one of several traits in Chinese schools:

- Are there subject matter and domain experts in common, such that there may be a reason for bringing together academics with similar interests?
- Are there areas completely missing that your organization may be able to provide?
- Are some NGO’s operating in certain areas of China which an organization can leverage?

In some instances grant funds are available for creating international programs or events and these are worth investigating as well. Note that even though many Chinese organizations use IP videoconferencing, gateway services are available for transcoding and supporting ISDN-to-IP connections.

Conclusions

Without a doubt as China's walls continue to open and the nation takes its place on the world stage as an industrial, political, and economic power, visual communications will play a key role in enhancing educational and training opportunities. China's rapid economic growth has created a tremendous demand for technical and management skills that cannot be fulfilled through the traditional education system alone. Video-enabled distance learning programs are bringing new levels of interactivity and flexibility to corporate and government training programs, degree programs, and advanced research. In turn, these technologies are part of the tool set that can be used to address broader social issues such as the gap in educational opportunities between rural and urban areas. As China works to upgrade governmental employee skills and bring medical care to the under-served, new opportunities for videoconferencing are created. And as the journey toward closer integration with the international community continues at all levels, visual communications will help China transcend the barriers of language and distance.

Taken together with the case studies and resources listed, this white paper is meant to be a starting point for the planning and enhancement of videoconferencing and collaboration initiatives within distance education programs that reside within the context of China's specific learning environment. We hope that it acts as a catalyst for identifying how these tools may or may not fit into the methodologies or goals of a program, and that as catalyst it serves to ignite new opportunities for deployments and for international exchanges.

About the Authors

Alan D. Greenberg is a Senior Analyst & Consultant at Wainhouse Research. As consultant, analyst, communicator, and strategist, Alan has worked in the telecommunications, videoconferencing, software and services, and multimedia arenas for 20 years, holding positions with VTEL, Texas Instruments, and several Austin, Texas-based startups, and consulting to many organizations. At VTEL he conducted research into dozens of distance learning networks, was product marketing manager for a set of turnkey classroom packages, and led a number of educational and training initiatives. Most recently he was primary author on the segment report, [*Video Communications Management Systems 2004*](#), and author of the white papers [*Best Practices in Live Content Acquisition for Distance Learning Networks*](#), [*Navigating the Sea of Research into Videoconferencing-Based Distance Education*](#), and [*Super-Size Bandwidth and Two-Way Video in the Classroom*](#). He also has authored reports on conferencing endpoints & bridges, streaming video, [web conferencing](#), and voice/fax services. He specializes in primary end user research and is a trained focus group moderator and interviewer. Alan holds an M.A. from the University of Texas at Austin and a B.A. from Hampshire College. He can be reached at agreenberg@wainhouse.com.

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marketing strategies, cross-cultural communication, and training. She is primary author of WR's recent report entitled [*Videoconferencing Takes Hold in China: IP Visual Communications and the Great Leap Forward*](#). Stacy consults with both China-based companies who are expanding into new markets and foreign companies entering the China market. Prior to joining Wainhouse Research, Stacy was global product marketing manager with VisionNex Technologies, a Beijing based videoconferencing middleware provider. Ms. Austin-Li holds an M.A. in International Relations from the University of Hawaii. She can be reached at stacy@wainhouse.com.

About Wainhouse Research

Wainhouse Research (<http://www.wainhouse.com>) is an independent market research firm that focuses on critical issues in rich media communications, videoconferencing, teleconferencing, and streaming media. The company conducts multi-client and custom research studies, consults with end users on key implementation issues, publishes white papers and market statistics, and delivers public and private seminars as well as speaker presentations at industry group meetings. Wainhouse Research publishes *Conferencing Markets & Strategies*, a three-volume study that details the current market trends and major vendor strategies in the multimedia networking infrastructure, endpoints, and services markets, as well as numerous research notes and other content at www.wrplatinum.com. Its free newsletter *The Wainhouse Research Bulletin* is read by more than 20,000 readers weekly.

About Polycom, Inc.

Sponsor of this white paper, Polycom develops, manufactures and markets a full range of classroom, corporate training, and medical education solutions through its high-quality, affordable voice and video communication endpoints, video management software, web conferencing software, multi-network gateways, and multipoint conferencing and network access solutions. For additional information, visit <http://www.polycom.com/>.

Appendix A – Acknowledgments

Wainhouse Research wishes to thank the following individuals for participating in our research into distance education in China:

- Dr. Congxiao Bao, Associate Professor, Network Research Center of Tsinghua University CERNET Center. (congxiao@cernet.edu.cn)
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Appendix B – Top Programs in China

Largest Distance Education Programs in China

As measured by the number of locations served in 2003 (Source: Ministry of Education).

- [China Central Broadcasting and TV University](#)
- [China Agricultural University](#)
- [Fujian Normal University](#)
- [Huazhong Institute of Technology](#)
- [Hunan University](#)
- [Tsinghua University](#)
- [Zhejiang University](#)

Top 25 Universities in China

Ranked by academic and research performance. (Source CERNET).

1. [Tsinghua University](#)
2. [Peking University](#)
3. [Zhejiang University](#)
4. [Fudan University](#)
5. [Huazhong University of Science and Technology](#)
6. [Nanjing University](#)
7. [Wuhan University](#)
8. [Jilin University](#)
9. [Shanghai Jiaotong University](#)
10. [Sichuan University](#)
11. [Zhongshan University](#)
12. [Xi'An Jiaotong University](#)
13. [Harbin Institute of Technology](#)
14. [Shandong University](#)
15. [University of Science and Technology of China](#)
16. [Tianjin University](#)
17. [Central South University](#)
18. [Peking Union Medical College](#)
19. [Nankai University](#)
20. [Southeast University](#)
21. [Tongji University](#)
22. [Beijing Normal University](#)
23. [Beijing University of Aeronautics and Astronautics](#)
24. [South China University of Technology](#)
25. [Xiamen University](#)