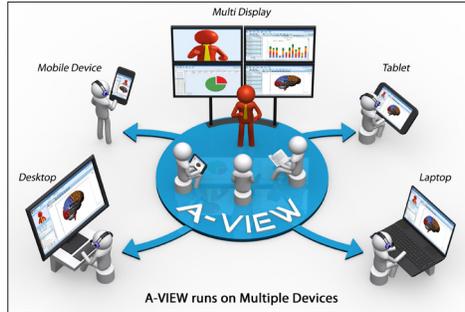
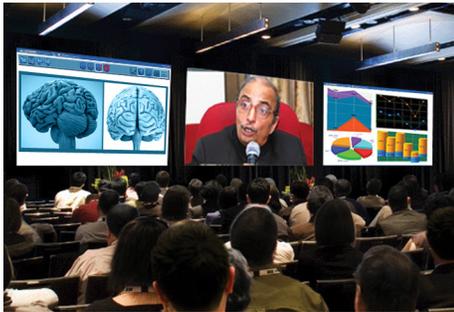


Amrita University Taps IoE Capabilities to Extend Educational Reach, Reduce Costs



EXECUTIVE SUMMARY

Objective

- Support qualified and expert teachers in training and empowering other teachers throughout India
- Deliver classroom content of the most highly skilled teachers to reach the vast student population across India
- Provide a platform that government officials can use to conduct collaborative meetings, trainings, and seminars

Strategy

- Leverage the growth of online connectivity to transform distance-learning program into a massive, Internet-based multimedia teaching and training forum

Solutions

- A-VIEW software allows collaborative, synchronized sharing of many types of multimedia content, including video and audio of lectures, text, associated videos, written instructions, and slideshow presentations
- Content is customized by the teacher, and the delivery pace can be controlled by students

Impact

- More than 450 universities and 4,000 colleges throughout India and abroad have access to A-VIEW, including 300 participating learning centers, tens of thousands of teachers, and up to 100,000 students
- Allows students to study with high-quality teachers and resources, trains new teachers, and reduces costs for institutions, teachers, and students

Background

In January 2014, Cisco released the results of an in-depth analysis of the economic benefits of the Internet of Everything (IoE) for the public sector. Cisco’s model revealed that some \$4.6 trillion in “Value at Stake” would result from the adoption of IoE capabilities across 40 key public sector use cases over the next 10 years, including smart water, smart buildings, smart energy, smart parking, and more (<http://bit.ly/1aSGIzn>).

As a next phase of its analysis, Cisco engaged Cicero Group, a leading data-driven strategy consulting and research firm, to undertake a global study of IoE capabilities across these 40 use cases – how the best public sector organizations are “connecting the unconnected,” as Cisco terms it. To that end, Cicero Group conducted interviews with dozens of leading public sector jurisdictions – federal, state, and local governments; healthcare organizations; educational institutions; and non-governmental organizations (NGOs) – to explore how these global leaders are leveraging IoE today.

The research examined real-world projects that are operational today, are being delivered at scale (or through pilots with obvious potential to scale), and that represent the cutting edge of public sector IoE readiness and maturity. The aim of the research was to understand what has changed in terms of the jurisdictions’ people, processes, data, and things, and how other public sector organizations can learn from (and replicate) the trail blazed by these global IoE leaders. In many cases, these jurisdictions are Cisco customers; in others, they are not. The focus of these jurisdictional profiles, therefore, is not to tout Cisco’s role in these organizations’ success, but rather to document IoE excellence, how public sector entities are putting IoE into practice today, and to inform a roadmap for change that will enable the public sector to address pressing challenges on multiple fronts by drawing on best practices from around the globe.

With sponsorship from the government of India, and buoyed by the growth of online connectivity, A-VIEW has transformed into a vast, Internet-based multimedia teaching and training forum.

About Amrita University A-VIEW

Amrita University was founded in 2003 by humanitarian leader Sri Mata Amritanandamayi Devi. It is a multidisciplinary research university headquartered in Coimbatore, India. Currently enrolling 18,000 students in 150 different degree programs, Amrita has five campuses in India and plans to open an additional six campuses across the country. It is accredited at the highest “A” level by the National Assessment and Accreditation Council, and has Nobel laureate Dr. Leland H. Harwell on its faculty as an adjunct professor. Partnering with several universities in Europe and 20 universities in the United States (including the University of California at Berkeley, Princeton, Purdue, and Harvard), Amrita participates in research, a distinguished lecture series, and other collaborative and exchange programs.

A-VIEW (Amrita Virtual Interactive E-Learning World) is the distance-learning platform developed by Amrita University. The A-VIEW project was initiated by Sri Mata Amritanadamay Devi (AMMA) to allow the best teachers to teach the large number of students across multiple campuses. It was implemented to compensate for a shortage of qualified teachers, and originally used satellite broadcasts of classes to extend learning options to Amrita’s remote campuses. With sponsorship from the government of India, and buoyed by the growth of online connectivity, A-VIEW has transformed into a vast, Internet-based multimedia teaching and training forum. Now offering collaborative educational activities to more than 450 universities and 4,000 colleges, A-VIEW also provides training for up to 50,000 teachers and 100,000 students worldwide.

Prof. Kamal Bijlani is director of the E-Learning Research Lab at Amrita University. He is a member of its board of directors, and has prior experience as head of the Lab. Prof. Bijlani served as program co-chair for the 2012 International Conference on Technology-Enhanced Education. He is a member of the IEEE (Institute of Electricians and Electronic Engineers) and has published with the organization. His work has been honored with a number of awards, including the Computerworld Honors Program Award for Educational Excellence in the field of Education Technology in 2012.

Vivek Vijayan is technical lead for the Amrita E-Learning Research Lab.

Objective

According to Prof. Bijlani, India needs to support qualified teachers in reaching the vast population of students. A-VIEW was originally implemented a decade ago as an initiative to bring the classroom content of its most highly skilled teachers to the five campuses of Amrita University.

Strategy

From Satellite to Internet

Because of limited Internet connectivity at the time of implementation, the initial version of A-VIEW utilized satellite technology for live video transmissions. Amrita eventually became a teaching hub for the country’s EDUSAT distance-learning

program, which used a similar technology to transmit educational content to dozens of additional learning centers.

EDUSAT introduced collaboration with U.S. universities. “EDUSAT was a major international initiative, which was signed between India and the United States,” Prof. Bijlani explained. “We would have some of the best faculty actually come to India, to our campus in Coimbatore, and they would give a talk that would go to all the satellite centers across India – some 40 or 50 centers.”

A-VIEW really began to take off a few years later as high-speed Internet replaced the need for satellite transmission, except in the most remote areas. “The satellite system was good, but it was fairly restricted in the sense that there were just a few teaching nodes in India, Prof. Bijlani said. “Even to be a receiving node for the satellite system, you have to get the satellite installed, you need to have the right connections, and it is restricted to that area or that place. Around 2007, we started looking at A-VIEW on the Internet.” As high-speed Internet reaches more and more students and teachers across India, A-VIEW delivers online classes to more campuses.

A-VIEW really began to take off a few years later as high-speed Internet replaced the need for satellite transmission, except in the most remote areas.

Government Support

With the support of President Dr. Abdul Kalam and partnering with several major Indian universities, Prof. Bijlani and his colleagues moved the broadcast platform to the Internet. The initiative matured under the administration and financial support of the National Mission of Education, an initiative of the Ministry of Education in India. Of the government’s response to A-VIEW, Prof. Bijlani said, “They appreciated it very much, and ... we started getting full-time funding in 2010.” The government, particularly the Ministry of Education, was motivated to promote A-VIEW as one of the country’s major e-learning venues, and to keep access to the software free of cost to all participating institutions.

The A-VIEW initiative and E-Learning Research Lab were partially developed in cooperation with the National Government of India, under the National Mission on Education through the Information and Communication Technology (NME-ICT) Act. The Amrita A-VIEW program and Research Lab receive funding from the university and from the Indian National Government, with an annual budget of approximately US\$1.5 million. Prof. Bijlani described A-VIEW’s initial development as in-house, built by a talented team of software engineers and university leadership.

Solution

Project Platform

The A-VIEW software program is a custom product developed by the Amrita E-Learning Research Lab for use on any basic ICT platform. Prof. Bijlani indicated that A-VIEW works on common platforms – such as Windows, Mac OS, iOS, and Android smartphones and tablets – to provide maximum compatibility and mobility. The program is both desktop- and web client-based. Students can download content to their devices, or they can receive it online.

“The content includes your writing, talking, PowerPoint, documents, PDF, animations in 2D, animations in 3D, YouTube videos, and websites. All of this is part of your content, and you’re sharing it. And not just sharing it – you’re controlling it live with your students, and they’re also able to control it.”

Kamal Bijlani,
Director,
E-Learning Research Lab,
Amrita University

Collaborative Content Access

According to Prof. Bijlani, A-VIEW allows collaborative, synchronized sharing of many types of multimedia content, including video and audio of lectures, text, associated videos, written instructions, and slideshow presentations. This content is customized by the teacher, and the delivery pace can be controlled by students.

“The content includes your writing, talking, PowerPoint, documents, PDF, animations in 2D, animations in 3D, YouTube videos, and websites,” Prof. Bijlani explained. “All of this is part of your content, and you’re sharing it. And not just sharing it – you’re controlling it live with your students, and they’re also able to control it.” Instructors can share their notes live with class members using a whiteboard replacement device.

Centers

Classroom content is broadcast from designated e-learning centers, and can also be viewed in these centers, as well as from any PC or mobile device with Internet connectivity. Prof. Bijlani indicated that learning centers have a dedicated line with a transfer speed of at least 2 megabits per second. In addition to sufficient Internet connectivity, centers on each participating campus must have a computer, a projector, and a reliable sound system.

Internet Connectivity

Prof. Bijlani said that A-VIEW software accommodates suboptimal connectivity: “Based on the bandwidth they have available, students can choose to get the teacher’s video at high-quality or low-quality stream, thereby reducing dependency on a high-speed Internet connection.” While presentations are usually shared via Internet, Amrita’s existing satellite infrastructure is used in areas with limited or no Internet connectivity.

Archiving

Classes are archived for future access and occasional editing. “We record each session, so the user can play it back after the class is over,” Prof. Bijlani explained. “The entire session automatically goes into a library. Then, students can watch the class after the session is over, and teachers have the option of editing the actual live video – they can take things out if they want to, and they can insert small segments if they forgot to make an important point.” This recording and archiving process enhances the process of course content delivery and retention.

Evaluation and Feedback

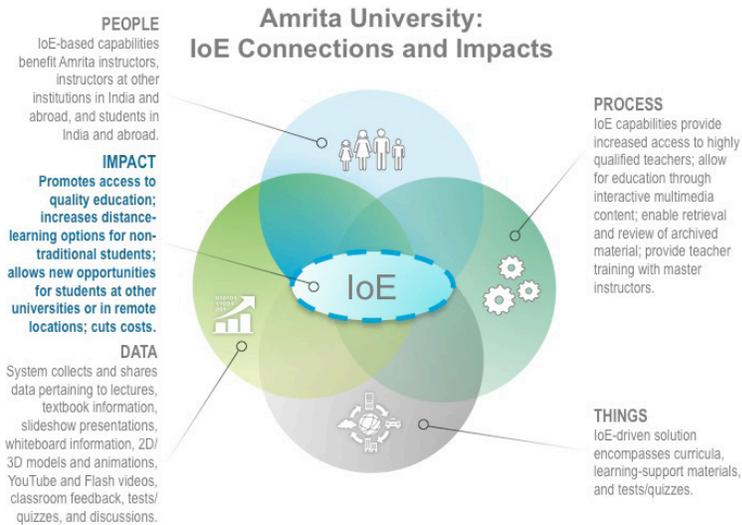
Testing and quizzing is conducted online as well, as are chats and text-based, question-and-answer sessions. Prof. Bijlani described the process: “The students go through [the materials], do some assignments, and do some quizzes by themselves, and they have some gaps in their knowledge. The expert teacher will then come online and the students will register all of their questions into the discussion forum. Then, the teachers answer those questions interactively through a live video conference.”

Currently, more than 450 universities and 4,000 colleges throughout India and abroad have access to A-VIEW, including 300 participating learning centers, tens of thousands of teachers, and up to 100,000 students.

Other Training

In addition to classroom activities and large teacher training conferences, Prof. Bijlani indicated that A-VIEW is also used for smaller meetings, workshops, and training.

Figure 1. Amrita University: New and Better Connections.



Source: Cisco Consulting Services, 2014

Impact

The Amrita E-Learning A-VIEW program has been widely popular, and is accessed frequently for learning activities. The work of Prof. Bijlani and his colleagues has been recognized with a number of awards, including the digitalLEARNING award for Best Open and Distance Learning Practices in Higher Education; an award for best distance initiative at the 2011 World Education Summit; and the 2012 Computerworld Honors Award for Educational Excellence in the field of Educational Technology.

Extended Influence

Prof. Bijlani gave an indication of the vast reach of this program: currently, more than 450 universities and 4,000 colleges throughout India and abroad have access to A-VIEW, including 300 participating learning centers, tens of thousands of teachers, and up to 100,000 students. At a recent 10-day training event dubbed “T10KT,” A-VIEW facilitated the training of 10,000 teachers simultaneously in 200 locations. Prof. Bijlani indicated that more than 50,000 teachers have received training in this manner from educators designated as “master teachers.” The program brings an additional 50–60 students into each of more than 100 courses among 50 different educational facilities.

Local Impact

A-VIEW is making a significant impact on higher education in India. Prof. Bijlani emphasized that while the role of local teachers has changed, it has not been diminished. He said, “The static Internet-based lecture may involve reading a book,

“The Internet boom in the country has led to a major surge in this public sector. This area has immense scope; however, growth depends on overall development of infrastructure and bandwidth.”

Kamal Bijlani,
Director,
E-Learning Research Lab,
Amrita University

watching a video, or seeing a lecture. After the initial lecture, local teachers need to mentor their students, show them examples, show them industry, and lead them through their exercises. That is still the job of the local teacher, fully. We reassure teachers by telling them that their job profile has changed a bit, but that they are still in charge of the local class. Now, rather than just giving a static lecture, they can do more discussions and problem-solving with the kids.”

A-VIEW provides many benefits for India’s distance-learning education. It allows students to study with high-quality teachers and resources, trains new teachers, and reduces costs for institutions and students.

High-Quality Education

Amrita’s A-VIEW program has made quality education accessible. Provided free of charge to participating institutions, it has expanded student access to India’s best teachers. A-VIEW provides a venue for educational exchanges abroad, and allows up to 100,000 new students in classrooms all over India to participate.

A-VIEW selects teachers for participation based on their qualifications and reputation. In essence, Prof. Bijlani described, this system allows all participating students to attend lectures with the teacher who wrote the textbook on the particular subject – a top-quality learning scenario. Because lectures are recorded and archived, students can review the material to gain a more thorough understanding. Archived videos also allow instructors to adjust content as needed to ensure quality and completeness for subsequent viewers.

Teacher Training

Beyond connecting students with great teachers, A-VIEW is a valuable venue for enhancing teaching itself. “IIT professors are teaching virtual classes in 100 engineering colleges across India,” Prof. Bijlani explained. “More than 4,000 colleges are connected to each other through A-VIEW for online classes, meetings, and workshops. More than 50,000 teachers have been empowered with the teacher training program via A-VIEW.” Not only does this program allow more people to be trained at once – it also allows people to access training who would otherwise have been unable to attend. “This process gives an opportunity for teacher training in remote areas; those who cannot travel can attend the training locally without overnight stay,” Prof. Bijlani said.

Reduced Costs

Particularly because it is provided free of charge to institutions, A-VIEW reduces costs for education and infrastructure. It also decreases travel expenses for both students and teachers.

Lessons Learned / Next Steps

Challenges with expanding A-VIEW primarily involve improving infrastructure and encouraging people to accept this new distance-learning possibility.

“We are realizing that anything built on top of the Internet is going to be extremely powerful. I think that is the very fundamental thing we have learned in the last few years because A-VIEW was so restricted [with] the satellite system. Now, with the Internet, it just opened up a whole new world, even in India.”

Kamal Bijlani,
Director,
E-Learning Research Lab,
Amrita University

Improving Infrastructure

Prof. Bijlani believes the scale of development for E-learning is limited primarily by the availability and quality of an Internet connection. “The Internet boom in the country has led to a major surge in this public sector,” he said. “This area has immense scope; however, growth depends on overall development of infrastructure and bandwidth.”

Mr. Vijayan concurred, describing how accommodating the lack of existing infrastructure presented challenges in the early days of the program. The team had to invest effort to train users in remote locations regarding the basics of ICT technology. “Basically, we have the technological expertise and people here,” Mr. Vijayan said, “but some of the colleges and the universities in India are in remote places where you need better connectivity, and we had to educate them using these ICT tools because most of them are first-time users of video-conferencing systems.”

To address the learning curve as connectivity began to spread through the country, Mr. Vijayan and his colleagues conducted training both online and onsite, walking coordinators at learning centers through the procurement and use of microphones, cameras, and other equipment. “We had to give them training and recommend products so they could come up to speed,” Mr. Vijayan said. This process is ongoing as more institutions join the A-VIEW program.

Accepting Technology

While improving infrastructure presented a physical challenge, a less-tangible obstacle Amrita faced related to people’s attitudes toward technology. “You can give somebody a computer, but you can’t force them to use it,” Prof. Bijlani explained. Some teachers were concerned that technology would take away their jobs. “When teachers see that one teacher can teach from one place and the classes are going everywhere, they start wondering, ‘What is my role?’” he said.

Although local teachers may not be teaching at the same level as the A-VIEW teachers are, Amrita works to reassure them that their classes are still fully under their control. Amrita has just, essentially, outsourced the static knowledge (or lecture portion) of the teaching. Prof. Bijlani indicated that A-VIEW is transforming teachers to become mentors who provide support and clarification in the learning process.

Growth of Distance Learning

Prof. Bijlani is pleased with the progress of A-VIEW as an educational option: “We are realizing that anything built on top of the Internet is going to be extremely powerful. I think that is the very fundamental thing we have learned in the last few years because A-VIEW was so restricted [with] the satellite system. Now, with the Internet, it just opened up a whole new world, even in India.”

While he does not expect a replacement of the traditional classroom, Prof. Bijlani foresees huge growth in online education. “It will become like an online supermarket,” he predicted. “The stigma associated with distance education will

change; it will become huge and available to anyone, anywhere, at an affordable cost. Universities will not only do traditional teaching, but will also do online teaching as well.” As distance learning swells in the future, A-VIEW will also expand to facilitate meetings and training sessions.

Building Partnerships

Prof. Bijlani plans to continue building partnerships with universities and other venues of higher learning both in India and abroad. In addition, A-VIEW is developing an online educational infrastructure for primary, secondary, and senior students to support learning in public schools.

Prof. Bijlani believes strongly in the virtues of online education, and encourages other institutions to come on board with A-VIEW or similar programs. “I think A-VIEW will be extremely beneficial because the whole world will improve as the education of the people improves,” he said. “We would encourage everyone to take this up, and we would also be happy to support them and partner with them.”

More Information

For more information, please visit <http://aview.in/>



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)