Ensemble Provides Flexible and Scalable Media Infrastructure at Rice University

CASE STUDY

At a Glance

Challenges

- Replacement of outmoded homegrown media server
- Accommodation of a wide range of video technologies and sophisticated, media-rich teaching methods
- Development of an agile system that can adapt to new challenges and grow with evolving demands
- Delivery of teaching materials outside the classroom, any time, on any screen

Benefits

- Provided unified platform for diverse audio and video applications for a plethora of educational needs
- Streamlined video content management and publishing systems to accomplish more with less
- Enabled efficient and flexible automated workflows, allowing forward-thinking faculty to support active learning with minimal effort
- Provided scalable media management framework to accommodate innovative learning environments

Summary

Rice University is a top-ranked private research university located in Houston, Texas. Often referred to as the "Harvard of the South" or "Southern Ivy," Rice engages in a high level of research activity and has produced 101 Fulbright Scholars, 11 Truman Scholars, 24 Marshall Scholars, and 12 Rhodes Scholars.

Rice University has an average class size of 14, and a six-to-one undergraduate-faculty ratio. Approximately 75 percent of students hail from the top five percent of their high school graduating class and more than 90 percent of Rice faculty have a Ph.D. or terminal degree in their academic fields.

Rice University is diligent in perfecting their teaching and learning practices. Whether it be a traditional, lecture-based classroom structure or active learning, Rice is committed to faculty/student engagement. As a result, media creation and capture has started to play a larger role on the instructional side.

Rice University's Manager of the Educational Technologies Group, Dr. Carlos Solis, is an integral part of the Academic Research and Computing division of the Information Technology department at Rice. Rice University's campus-wide classroom technology and media strategies depend on the skillful crafts of Dr. Solis and the Educational Technologies team.

Challenge

In the past, Rice University managed streaming video and other rich media content in-house, with a system developed by the EdTech Team. "This was very good when it was initially designed, about eight years ago," said Solis. "But like anything home-built, it became unmanageable."

Intended primarily to share video recordings of university events, such as the President's Lecture Series and university commencement, the in-house setup was not designed to accommodate progressive, media-rich teaching methods.

"Rice's faculty has started to explore new avenues of delivering instruction," Solis said. "With the creation of a space for dialogue between faculty and students, Rice has added active learning classrooms. Some of our faculty are teaching in the classroom using structured, centric, active learning methods".

Growing demand among faculty for streaming audio and video teaching tools, coupled with Solis' unified approach to systems administration, called for a more practical approach to media management and publishing, outside the scope of the homegrown system.

Compounding those challenges, the consumer market for video technologies has provided many choices, in recent years. For Solis and the EdTech Team, accommodating endless varieties and combinations of digital cameras, camcorders, smartphones, tablets, webcams, lecture capture systems, apps, and software became increasingly time-consuming. Ultimately, keeping the homegrown system updated and agile, and in harmony with emerging technologies, while balancing the team's other responsibilities, was becoming unsustainable.

To get ahead of the problem, Rice's EdTech Team explored video content management environments that could meet the growing demands of its constituents. "We needed the ability to be quite agile in terms of how we added media to our system, and how we provided distribution channels to serve all sorts of constituents," said Solis.

He outlined search criteria for a new platform that would allow his team to facilitate student and faculty access to learning materials outside the classroom, on their own devices and on their own time. This included the ability to accommodate automated

workflows, enable scalability, and work well with established infrastructure.

Search

Spurred by evolving educational needs and technical challenges, Rice University EdTech Manager Dr. Carlos Solis launched a search for a video content management solution in late 2011. After testing a number of leading video platforms, Solis determined "Ensemble Video seemed to have features and functions focused on what our faculty, and community had addressed."

The team reviewed the platform's dynamic video playlists, which enable the delivery of custom, organized collections of media content to any public or private web page, including the university's learning management system (LMS), Sakai. Faculty members appreciate this feature, which

facilitates content presentation in their courses without a lot of scripting or additional intervention. Embedded playlists can be updated from within the Ensemble interface, allowing centralized control over a wide range of delivery points.

Ensemble's watch directory mechanism could further automate video upload, management, and publishing workflows. For example, the team was able to designate watch folders to automatically ingest particular audio and video files (with optional XML Shadow Files that provide metadata), images, attachments, or full XML files that document the location of media and provide metadata.

These functions, together with Ensemble's integrated encoding solution, auto-publishing capabilities, and video dropbox feature, would help the team streamline media management and publishing, and assist with the university's immediate and long-term goals.

"At the end of the day, the ability to set up ingest mechanisms that pull content from all kinds of other technologies provides the glue that allows us to bring all sorts of technologies into the campus," said Solis. "Our intention was to have a unified platform that fits well with our current infrastructure environment, that's open for future developments, and can grow with our needs."

Solution

Rice's EdTech Team began a pilot with Ensemble Video in November 2012, and brought the platform into production in January 2013, to replace their aging in-house media server, and provide the infrastructure and feature set necessary to support media-rich learning environments.

EdTech manager Dr. Carlos Solis set to work leveraging the platform's automation features, and ability to work together with complementary infrastructure, in order to unify and streamline Rice's approach to diverse instructional scenarios, and create a scalable framework for the future.

So far, Rice has amassed approximately 130 media libraries, containing nearly 3,000 videos, with more than 162,000 views. "Every day we're finding new ways to use Ensemble, and to use it as the common presentation environment for our faculty and students" said Solis.

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Ensemble Video in the Classroom and Beyond

Solis and the EdTech Team currently use ensemble Video to support teaching and learning at Rice University in a variety of ways.

In a graduate level music course focusing on writing and speaking about music in performance situations, Professor Michael Webster records student presentations to provide them with self-awareness and individualized feedback on their presentation skills. In the past, he hand delivered his camera's memory card to the EdTech staff. Encoding and uploading was handled manually. Now, Webster can upload videos to Ensemble independently, and make them immediately available to students in Sakai.

Dr. Clark Haptonstall, professor of Sports Management, uses video clips from newscasts and documentaries to trigger student discussion in his junior-level sports ethics course. He DVRs relevant programs, pulls chosen segments with simple editing software, and then uploads them to Ensemble Video from his laptop. "Students are able to watch the uploaded videos prior to class, on their schedule," said Haptonstall. "All they need is an internet connection and a laptop or tablet. Because of this, I no longer have to devote class time to showing videos. Instead, I can focus on instruction and discussion. The response from the students has been quite positive."

Shari Smith, e-Education Facilitator for Rice's Professional Master's Programs in Science and Engineering, uses Ensemble with Crestron to record faculty lectures, and publish them to Sakai. Students utilize the videos to review course content, and to maintain the pace of the course when they have to miss class. "Because our students are working professionals, it is important they have the ability to view a class they miss due to workplace obligations," said Smith. "In addition, all students, including international students, find it helpful to listen to the lecture again. We observe that students are better able to participate in class discussions when they have a secondary method (recorded lectures) to take notes."

The videos provide an extra boost for students to increase their understanding; lighten faculty emails because some student questions are answered by reviewing the recorded lectures; and enable faculty content sharing to facilitate academic content.

With minimal training, Rice faculty can record lectures and presentations in Camtasia Relay (by TechSmith, an Ensemble Video partner), then publish to Ensemble for immediate viewing on any LMS, CMS, blog, or webpage. iPad and iPhone users can use the Fuse app with Camtasia Relay to record and upload straight from their device to the Ensemble Video platform.

Results

Rice University
Case Study

Rice University

As part of the university's MOOC (massive open online course) team video production workflow, a university videographer produces recordings and uploads them to an Ensemble media library for faculty review. This alleviates challenges inherent in transferring large files, and provides a common internal viewing destination for MOOC videos.

Faculty involved in flipped learning create video lessons, and use Ensemble to publish videos in Sakai. Under the flipped learning model, the instructor provides basic instructional content in video format, for students to consume on their own time and at their own pace, enabling faculty to assist students on a more personalized basis during class time.

The EdTech Team provides faculty with their own self-selected online media libraries of clips from feature films, documentaries, and Television programs, to help them illustrate academic concepts in class.

Results

EdTech Manager Dr. Carlos Solis and his team use Ensemble Video to provide a unified front for a wide range of classroom technologies and media services. The system accommodates content from Rice's high-end, full-production media control rooms, to rudimentary faculty recordings using tablets and webcams, as well as excerpts from feature films, documentaries, and television programs.

The EdTech Team has decommissioned its legacy streaming server for in-house publication and distribution, and retired its separate encoding system, replacing them both with Ensemble Video, effectively streamlining Rice's overall video management workflow.

Ensemble combines an intuitive user interface with Rhozet ProMedia Carbon® to transcode and compress media, and Wowza Media Server® to provide high-performance unified streaming.

"Part of my work revolves around trying to find solutions to problems we have," said Solis. "I try to look forward to needs that I understand will come our way, based on where the technology world is going, along with where the educational world is going.

But most importantly, our direction is dictated by the expressed needs of our faculty and students. Constant conversation with our instructors identifies needs and creates directions for our endeavors."

Solis is confident in the platform's ability to support current and long-term needs for rich media management and publishing. "Ensemble really embodies what I had as a vision for systems, in many ways," Solis said, explaining how, in the past, proprietary systems can present roadblocks and rapid added enhancements. "We were constantly having to tell people 'To do this, you have to go use X,' and 'To do that, you go use Y,' and so forth."

Now, Solis is able to provide for faculty with tools they are familiar with, and enable them to address needs inside and outside the classroom, accommodating their preferred tools, formats, and publishing points, with one flexible, unified platform.

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"The idea was that we were going to have one front, in which we could basically plug in all sorts of technologies," he said. "Ensemble embodies that, because of all the different kinds of inputs it can take content from, and our goal is to present them through a unified front to our customers."

Students have commented on the benefits of class media delivered to OWL-Space, Rice's branding for Sakai. "The captured lectures were a great help, and I would strongly suggest this practice be made available for more courses," said a student in a geology class. "The biggest advantage was being able to concentrate on the content of the lecture, instead of trying to take notes and keep up with the lecture at the same time. Over the course of the semester, I saw each recording at least twice, mostly before taking the midterm and final exam. Being able to listen to the lecture if I was late to a class or missed it altogether was another major advantage."

Another student said, "I used those videos to complete my preparation for my exams, homework, and general knowledge. I had spent hours watching those videos in the library and at my home during my dinner or coffee break like watching a TV channel without consuming my time. It is great to have a chance to replay your professor's sentences when you're missing some parts."

Future

Looking ahead, Rice University EdTech Manager Dr. Carlos Solis hopes to expand the university's use of Ensemble with faculty consultation to engage students in active learning. "I would like to see every digital piece of course content be available to our students and faculty through Ensemble," he said.

The EdTech Team is in the process of deploying Crestron CaptureLiveHD™ systems in two classrooms, providing greater flexibility on the recording side. These units integrate with Ensemble Video, and provide a simple and cost-effective solution for capturing lectures, presentations, procedures, seminars, and training sessions in high-definition 1080p.

Working with faculty, the team is developing an automated workflow, which will allow users to record and upload from the Crestron devices into their Ensemble Video media library, with minimal intervention.

Rice is experimenting with a cloud-based service that unifies HD video conferencing, mobility, and web meetings. Zoom HD video conferencing will be used for a variety of different applications by the IT department, and Solis plans to use Ensemble Video to make recorded conferences available to his constituents.

Solis would also like Ensemble to play a role in Rice's digital portfolios initiative to help students reflect on their academic assets, and present what they have learned in online, digital collections.

Over time, Solis sees his constituents increasingly taking advantage of digital teaching materials, unified by the Ensemble Video platform, and continually fostering a more active, media-rich learning environment.

"So far, feedback is very positive," he said. "Faculty members are taking advantage of Ensemble."

Future Enhancements

To further improve EdTech services, Rice is working with Ensemble to develop a more robust search system, and expand the platform's metadata structure. "This would enhance the management and functionality aspects, as our collections continue to grow," said Solis. The EdTech team looks forward to future upgrades of Ensemble's built-in portal, and playlists. "Ensemble has been quite responsive to our input," said Solis. "And we believe these elements will find their way into the system in upcoming versions."

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