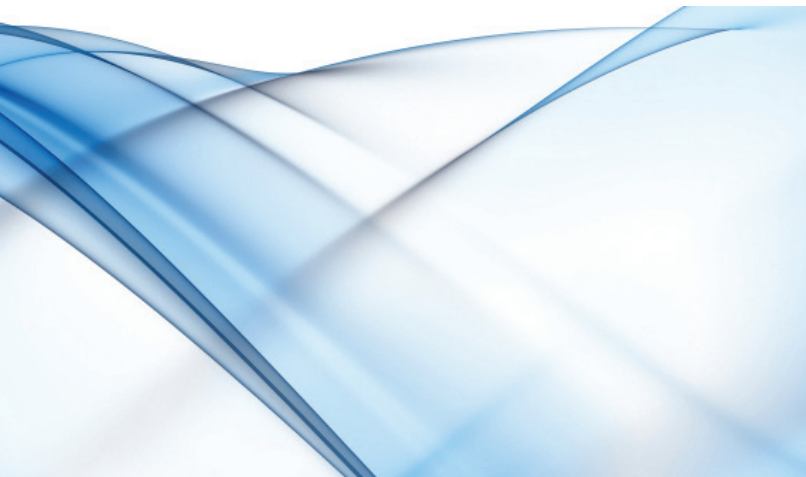




## // CASE STUDY //

UNIVERSITY OF MAINE USES WOWZA STREAMING ENGINE TO ADD STREAMING VIDEO TO CUSTOM-BUILT LCMS, DELIVERING INTERACTIVE LEARNING TO THOUSANDS OF STUDENTS ON ANY DEVICE



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— Ron Kozlowski, director of the  
UMaine BioMediaLab



Serving roughly 11,000 students, the University of Maine (UMaine) is the state’s flagship research university, offering 88 bachelors, 70 masters and 30 doctoral programs through its main campus in Orono and several satellite locations around the state.

Aiming to make course content for its largest biology lecture classes more accessible to students throughout the University of Maine, the School of Biology and Ecology (SBE) struggled to find an off-the-shelf Learning Management System (LMS) to suit their needs. So, they built their own.

The Synapse online LCMS was developed in 2008 by students and faculty in the UMaine School of Biology and Ecology’s BioMediaLab, a facility devoted to enhancing biology education through technology. It has since evolved into a full-spectrum LCMS, delivering multi-media content and supplemental course materials to a much larger student population across multiple courses, disciplines and departments. Available online, and as a mobile app for iOS (with Android coming soon), Synapse provides a rich media learning experience with customization options that allow professors and students to interact anytime, anywhere.

## **The Challenge:** Delivering Video Efficiently & Reliably to Any Device



Originally built to deliver video via QuickTime Streaming Server, Synapse soon struggled to provide the reliable user experience UMaine required. Because of the rural infrastructure in Maine, DSL and 3G cellular service provide the backbone of Internet connectivity, which made delivering a consistent high-quality video experience difficult with QuickTime. During peak demand spikes, Quicktime Streaming Server became overwhelmed, restricting the number of viewers who could access material. To try to solve the problem, UMaine's BioMediaLab invested in another server to upgrade the system, but the lack of support required the use of a 3rd party provider, and the proprietary format meant that the growing number of mobile iOS device users couldn't access the content.

"We've seen a huge growth in demand for students wanting to access content on mobile devices," said Ron Kozlowski, director of the UMaine BioMediaLab. "It's not even really an option now, it's a requirement. Professors not only want to record lectures, but also offer supplemental video that reinforces the course material, including content from public sources like NOVA, PBS and more. But, our Flash-based video platform meant that not everyone could access all of the content. Plus, with all the plug-ins required and the questionable security, we felt it was time to begin moving away from Flash."

Adding to the complexity of finding a better streaming solution, the Synapse team wanted to give professors the ability to upload video course materials themselves, with a self-service portal that didn't require advanced technical expertise.

## **The Solution:** Wowza Streaming Engine

An online search led Kozlowski to Wowza Media Systems, and he immediately downloaded the trial and began experimenting. "I liked what I saw, but I wanted to know more about how it could solve my problem," he said. "I contacted the Wowza team and discovered it would accomplish everything I needed."

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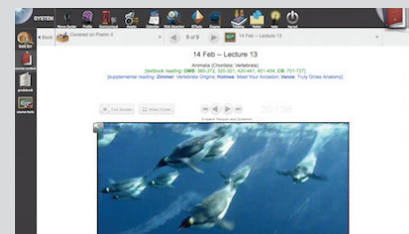
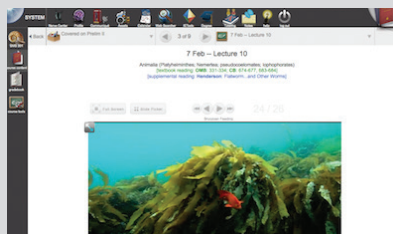
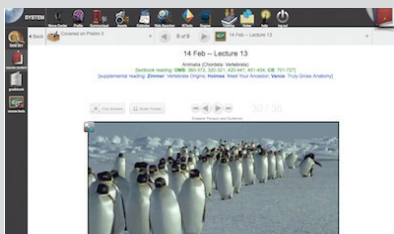
— Ron Kozlowski, director of the UMaine BioMediaLab

Not only did Wowza software integrate seamlessly with the Synapse application, but it also expanded mobile access to users on any device. Wowza's "any format to any device" automatic file conversion allowed UMaine to stream assets in its existing video library to any device, regardless of the original format.

"Wowza was able to deliver this mobile capability, while at the same time creating an amazing streaming environment," Kozlowski said. "Now we can deliver video in a web stream, to iOS, or any other viewer, and we didn't have to reformat any of the video we already have. That was a huge time, work and money-saver."

With Wowza Streaming Engine server software, UMaine also got some much-needed flexibility in its hosting environment. Now, the video platform runs on a 24-core, solid-state drive Linux server, instead of the aging Flash server that was ready for retirement. Wowza's seamless compatibility with virtually any storage platform means that the processing and delivery of video between the server farm and streaming server is very fast, eliminating the cumbersome, multi-step process required with the former Flash-based environment.

## **Synapse:** Enhancing Biology Education Through Technology



To make course content easily available for its largest biology lecture classes, the School of Biology and Ecology built their own Learning Management System, Synapse, which incorporates Wowza Streaming Engine streaming software.

"Very clearly Wowza was best solution out there, and the price point was perfect for our budget," Kozlowski said. "The setup time was surprisingly fast, it integrated quickly into our product line and support has been great."

## **The Results:** State-of-the-Art Streaming to Thousands of Students

With Wowza Streaming Engine, formerly Wowza Media Server, Synapse is now delivering some 3TB of video content to 2,000 students per semester, including about 98 percent of the freshman class. Professors can upload their own video course materials in any format and Wowza automatically converts files to the right format for immediate delivery. This seamless workflow allows UMaine professors to create a multi-media learning experience, minimizing friction in adding video to the curriculum.

"We want professors to create a better online experience for students, so usability is a very big key for us," Kozlowski said. "Before, they'd have to bring content to us, and we'd have to work with them to get it ready, which made it time-consuming and annoying. With Wowza, our professors are able to efficiently use the latest technology to create a more exciting learning environment."

In addition to science-based lecture courses, the University's large Fundamentals of Public Communication course has been added to the Synapse system, but with a unique twist. The course requires students to give oral presentations in a live class, which are recorded and then uploaded into the Synapse system for targeted self-evaluation assignments. The Wowza-powered streaming component not only allows the entire class—some 500 students—to upload and view these presentations but also collaborate with one another and teaching assistants to provide feedback, critique and grading frame-by-frame for immediate, inline feedback.

To accomplish this, the team had to find a way to bypass the compression process on these very large files, which might take days to process on other systems. With Wowza, the video can go straight from an H.264 camera to the Wowza server for immediate streaming, directly to the mobile app. This has not only cut the workflow in half but also eliminated the compression time delay.

The UMaine Synapse team has been so impressed with Wowza software, they are working to phase out Flash completely in order to give students a more reliable, flexible and broadly accessible way to participate in both traditional and online courses.

Every year, Kozlowski and his team of four field more requests for adding new courses to the Synapse video system. Fortunately, with Wowza's user-friendly platform and simplified streaming workflow the team is able to accommodate professors who want to integrate video into any curriculum. In fact, Synapse and Wowza



software has been a great learning experience for a few savvy students. A math major with no programming experience built the compression server that integrates seamlessly with the Wowza server. A high school student recently took on the project of setting up Google Drive integration.

"This is the type of stuff that allows us to leap ahead. We challenge students and they come through," he said. "Plus, we get great excitement from users in the student body because they know Synapse was built in-house by their classmates."

The Synapse team already has plans to add live streaming to the platform. They're currently working with UMaine departments to live stream presentations by guest lecturers from places like France and Italy, allowing more students to participate in the international learning experience.

"It's great to be able to provide a service to professors who want to teach in a unique way and get it done quickly. I love it when a technology just works and Wowza does that. I don't have to worry about the streaming server not working right and having to spend time trying to figure out the problem. And, since we're a small team that reliability is very valuable, freeing us up to work on innovative solutions instead of troubleshooting problems," Kozlowski said. "I've been using streaming servers from the start and have to say Wowza is by far the best I've seen."

## About Wowza Media Systems

Wowza Media Systems, LLC ([www.wowza.com](http://www.wowza.com)) helps organizations harness the power of streaming by reducing the complexities of audio and video delivery to any device anywhere. Organizations in more than 150 countries count on innovative and award-winning Wowza software to build, deploy, and manage customized streaming solutions that deliver high-quality and engaging live and on-demand experiences.



To learn more about Wowza Streaming Engine, visit [www.wowza.com](http://www.wowza.com).