



Organization

Boise State University

Industry Education

Challenges

- Unsustainable IT
 resources, support
- Aging hardware
- Not enough faculty, student usage
- Rigid recording times, locations

Solution

The phase out of hardware/appliancebased classroom capture and move to software-based TechSmith Relay

Thinking Outside the (Capture) Box:

How Boise State University's move from a hardware- to softwarebased lecture capture video platform improved usage, ROI, and student outcomes



The Situation:

Evolving as a hub of tech sector growth and innovation, Boise State University found themselves at a crossroad. During the past several years of providing lecture capture and online learning, Boise State had acquired multiple platforms for video creation, hosting, and streaming. Maintaining numerous systems had become unsustainable from an IT and usage perspective, especially with a goal to grow online initiatives.

Leif Nelson, Director of Learning Technology Solutions, Office of Information Technology, explained: "Many of the video platforms were single-purpose or redundant. The hodgepodge of tools and applications was akin to a cluttered kitchen drawer full of awkward and underused doodads."



The Challenge: Unsustainable IT resources, support

In addition to legacy video tools employed throughout the years, Boise State was dividing efforts between two video creation and delivery methods. Their College of Business and Economics (COBE) was using a selfhosted server solution for classroom capture with associated classroom appliances (MediaSite), while the rest of campus employed an open-source hosting platform (Matterhorn) along with an encoding system and appliances (323 Link). In addition, they were also using Kaltura for video hosting. All together, their IT department managed 15 on-site servers plus classroom hardware in order to record and deliver lectures for their 22,000 undergraduate and postgraduate students. Offering these systems across campus required several IT staff to respond to support tickets each day, often at a hectic level.



The classroom hardware was particularly problematic. It was expensive – each capture box was stationary and connected to each room, significantly limiting the number of rooms that could be lecture capture-enabled, and requiring a disproportionate amount of IT support.

You get up every morning, you'd be eating your breakfast, drinking your coffee....then you login and check all the recording devices, see all problems, and you send the tickets in," said Jack Vant, Instructional Technologist, Office of Information Technology. "Your morning could be really good or it could be crappy."

Additionally, the vendors supplying the solutions had not been sufficiently responsive to support requests, putting even more burden on in-house IT staff.

"Hardware is kind of a tough way to go because you need a lot of technical support people on the ground," continued Jack. "It's also costly, so it's hard to scale to any degree."

Aging hardware

Existing solutions were aging out - the classroom appliances were four years old and would need to be replaced in order to keep performing. Keeping systems running would have required a substantial investment in new appliances, support improvements, maintenance renewals and hosting contracts, all on hardware-based technology.

"We were facing this decision point where continuing the status quo would have been hundreds of thousands of dollars, not to mention the staff we would need to implement," explained Leif. "It adds up."

Not enough faculty, student usage

In the meantime, there had been a downward trend in classroom capture usage. Faculty found the existing lecture capture systems too difficult to operate, inconsistent, and, as a result, few were using it. In the prior four academic years, the number of classrooms recording lectures decreased from 50 to about 20.

By all indications, the videos that were created had minimal student engagement. Analytics statistics reported very little student viewership of the classperiod length lecture recordings.

Rigid recording times, locations

Not inconsequentially, faculty were frustrated with the limiting nature of existing video systems, which only allowed them to record a fixed-shot of their entire class period. Each room's pre-placed camera only recorded professors lecturing in the front of the classroom, tying them to the lectern. The unforgiving scheduling feature predetermined when recordings would stop and start, giving the professor no control over the recording process.



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There was no easy way to facilitate changes that often happen in a dynamic learning environment, such as recording a different spot within the room, a different start time, or to switch classrooms due to space limitations or scheduling reasons.

While some faculty used this traditional method of lecture capture, it didn't accommodate the majority of instructors. Many faculty had expressed interest in capturing student presentations, guest speakers, shorter lecture segments, and other recordings that deviated from the scheduled lecture time slot. This inability to decide when to stop and start recording was a disincentive for many faculty to use video in their courses.



Boise State Administration Building

A need for change

Undoubtedly, the Office of Information Technology recognized that the existing configuration of video tools was not serving their needs. They made the decision to critically examine how they were managing and supporting instructional video across campus.

By way of formal proposal, they set out to thoroughly understand and define the needs of faculty, staff and students, and identify a better solution that would "displace the costly, complex or featurelimited hosting applications," explained Leif.

The Committee evaluation process

To oversee this critical process, the Office of Information Technology formed the Assess Classroom Capture Committee to 1) conduct a needsanalysis, 2) evaluate different lecture capture tools, and 3) narrow them down to a single, better solution to use across the entire campus.

Pedagogical implications

It soon became apparent that evaluating the scope and use-cases for instructional videos necessitated including recent research and 'best practices' for active learning. In keeping with the latest studies demonstrating that short, focused, single-topic videos are best at enhancing video's educational value, it became clear to the committee that "...a model that encourages automatically scheduled, class-long recordings is probably not an ideal technology to support learning effectiveness."

This conclusion aligned with what instructional designers at Boise State had been advising instructors to do for years - keep videos short, concise, and only capture the most important components. However, due in part to video platform restrictions, instructors had not widely followed this best practice.



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The Committee realized it needed to think openly to find what criteria was truly important

The turning point - re-evaluating key criteria

Tradition is an esteemed component of higher education, informing everything from graduation ceremonies, to instruction, and even IT. Despite this inclination, the committee realized it needed to think openly about what criteria was truly important at a high level. They needed to re-think whether what they had assumed was key criteria was actually promoting - or impeding - a successful video solution.

Specifically, they found that hardwarebased systems weren't meeting the educational requirements of faculty and students, and disproportionately required enormous technical resources to maintain and manage.

"Tradition certainly influences teaching and the use of technology," commented Leif. "From a process standpoint, we had to suspend what we thought were these critical components. We needed to think out of the box a little bit to see where that leads."

Taking into account key perspectives - including faculty, IT, admin, and

students - logically steered them to look at alternatives to what they had done before. Despite the wealth of evidence directing them toward a new path, they still diligently provided multiple supporting proof-points. "I had to think about how I could make a case for this," said Leif, "At the end of the day, the stars kind of aligned."

After careful and thorough assessment, the Committee challenged the status quo in more than one area, in order to provide "a flexible and ubiquitous solution to accommodate many of its instructional video needs," explained Leif.

A broader range of options

Following the needs analysis, The Assess Classroom Capture Committee conducted an evaluation of lecture capture solutions, including an inventory of the many tools they had amassed over the years. In addition to administrative and IT advisement, the Committee worked with professors and instructional designers to develop a rubric to use when evaluating the tools.

Based on criteria developed by faculty and students, Phase 1 of the process included open vendor demo sessions presented to faculty and staff, to see how each one worked and determine the strength of the solutions.

Vetted by faculty and staff, they narrowed the options down to four:

Open source video hosting platform, with hardware appliances installed in classrooms (currently in place on campus)



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- Self-hosted video platform, with hardware appliances installed in classrooms (currently in place in their COBE)
- Cloud-hosted video platform solution, with vendor hardware appliances installed in classrooms
- Software-based video platform solution (TechSmith Relay) to host and stream content in the cloud, with no additional hardware needed, using software-based recorders on the presenter's computer in the classroom

Piloting the finalists

As part of a thorough and in-depth trial, groups of five instructors piloted each option, getting accustomed to how it works, its features, workflow, and the actual way it performed for them in the classroom. Eventually, they realized it was crucial to move to a cloud-hosted solution and narrowed it down to the hardware-based, cloud vendor solution (Mediasite) and the software-based cloud solution (TechSmith Relay).

Keeping in mind the goal of broad adoption, the Committee kept a close eye during the pilot on how instructors felt about the tools, and how much they were actually using them. Out of the two finalists, TechSmith Relay had the highest rate of success compared to the appliance-based option. Moreover, TechSmith Relay received the highest value for the statement: 'Using classroom recording has made me a more confident user of classroom technology.'

Seeing these usability results, the Committee began to realize that this technology change would not only improve tools for professors already using lecture capture, but also have a significant impact on encouraging more faculty to adopt video in their classrooms. "Towards the end of the evaluation and pilot of various classroom capture solutions," Leif explained, "the team discovered that a profound opportunity was sitting right under our nose: a single, unified video platform could not only meet the needs of classroom capture, it could also replace other applications [including MediaSite, Matterhorn, and Kaltura]. It could transform the ways in which faculty members thought about instructional video "



Faculty felt TechSmith Relay had a positive impact on Student learning

Additionally, the Committee saw an increase in perceived learning with students. In a post-pilot survey of faculty, all respondents felt that the use of classroom capture with TechSmith Relay had a positive impact on student learning (by marking "Agree" or "Strongly" agree on a 5-point likert scale). Boise State recognizes the importance of monitoring faculty and student perceptions, as they are crucial to a successful adoption across campus.





The Recommendation:

Armed with experience from the pilots, the Committee recommended that Boise State phase out hardware/ appliance-based classroom capture and move to software-based TechSmith Relay. In addition to their own in-classroom evaluation, this recommendation grew from a variety of factors, including:

- User feedback
- Research and scholarly literature on the use of video for instruction
- Analyses of cost and technical complexity
- Comparison of features/advantages of each option

The Committee recommended the software-based solution (TechSmith Relay) for many reasons, including the notable recording flexibility, scalability to any classroom, complementary suite of software tools including Camtasia, editing ability, portable content, and ad-hoc usage. From an IT perspective, the TechSmith solution is the most affordable, with the least amount of technical support and maintenance. Additionally, this solution easily integrates with their LMS (Blackboard), has a userfriendly content management interface, can pull in instructional content from external sources (such as YouTube), and can embed quizzes directly into videos to measure student learning.

The resulting recommendation achieved the Committee's goals of a better solution that would accommodate the various approaches to instruction while maintaining scalability, preference, and diverse use cases.

Getting on board

After nine years of using disparate systems, Boise State purchased TechSmith Relay for rollout across campus. This solution equipped them with unlimited client recorders, a new cloud-hosting environment exclusive to their university, and flexible options for user and content management.

Since TechSmith Relay is complementary with TechSmith Camtasia, a popular software-based recorder and editor already in use by faculty, it allowed instructors to continue a more advanced editing experience with a preferred tool. To offer this ability to everyone, Boise deployed the TechSmith suite of products, including the TechSmith Relay recorder, to all IT-supported classrooms, campus-wide.



Results & ROI: A surprisingly smooth rollout

Despite previous experiences with technology rollouts, this change was markedly easier.

"When we rolled out TechSmith Relay, we thought we'd have a glut of IT support tickets, but the calls just didn't come in," Jack explained.

"From a process perspective, whenever we change one of these systems, it is a lot of effort from an IT perspective



"Very few people had technical problems," remarked Leif. "As support staff like to say about TechSmith: 'It just works."

> - Leif Nelson, Director of Learning Technology Solutions, Office of Information Technology

and a faculty perspective, " explained Daniel Gold, Associate Director, Learning Technology Solutions. "To make this migration happen, it was a couple of buttons. It was available in every classroom, the control is in your hands. It was a hard thing initially to wrap our heads around. It was very refreshing. The change-management process was much easier because there was so much good news to share."

Ultimately, removing the costly, clunky, appliance-based solutions greatly reduced the amount of issues, overall. No longer needing to deal with complex or feature-limited hosting applications was a huge burden lifted off faculty and IT. Software-based TechSmith Relay simplified the process for everyone. "Very few people had technical problems," remarked Leif. "As support staff like to say about TechSmith: 'It just works."

Less ongoing maintenance, support

With previous hardware-based systems, IT staff were consistently dealing with IT issues, every day. "There used to be two to three people running around in the morning," commented Jack. "All of a sudden, I can eat my breakfast in peace. Now, we're freed up to go to the classrooms, show people how it works, and get them started."

IT staff also noted that the simpler TechSmith Relay interface didn't require as much ongoing training, to show staff how to use it. "Typically, one session is all they need, and they're off to the races, " explained Jack. "When I show new people who don't even understand it, they say: 'That's all?'"

The software-based approach saved IT staff time, and freed up money that the university could then use elsewhere. It immediately allowed Boise State to equip all of their general-purpose classrooms on campus by using the desktops and laptops they already had, which is far more accessible for faculty members than what they had been given previously.

> With [TechSmith] Relay we have been able to save 60 hrs/week in FTE and human resources needed to monitor and maintain the 15 servers," said Jack. "By consolidating our video creation and management systems on campus to just [TechSmith] Relay, we are saving the university over \$350,000 annually in software, hardware, and human resource costs."

More faculty using video

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Right away, the difference in usage was apparent, compared with previous tools. Nearly 300 faculty members started using Relay within the first few weeks of class, and adoption grew as word spread about how easy it is to use. This usage was a significant increase from only 50 faculty using previous lecture capture systems, even after full rollout. Now, Boise State currently has over 9,000 active users, 15,000 videos, and more than 163,000 views. This equates to a six times greater adoption rate, reducing their cost per user by over 99%.

Faculty have created and shared more than 4,500 videos, and feedback from instructors about the move to TechSmith was positive. Instructors like the way it is easy to use and doesn't require them to focus on the technology.

"There's definitely a step approach to get people used to what's possible with technology," said Leif. "TechSmith is a prime example of an easy way to get started with making video content."

Not just embraced by the technicallyinclined, even traditional, seasoned instructors were quick to get started with TechSmith Relay. "I found it to be a seamless process," said Jeff Anderson, Associate Professor and Director of Clinical Education, Department of Respiratory Care. "Even for me, a pencil and paper technophobe, I found it works very well. This is by far the easiest product out there for me as an



Instructors were able to use the technology for their specific teaching styles

Enhancing lecture capture, teaching options

In line with their overarching goal,

TechSmith Relay provided instructors more ways to use the technology for their specific teaching style, supporting a variety of methods and approaches. Faculty appreciated the way TechSmith Relay let them continue to record entire lectures, if that was their preference. It also provided ways to enhance those recordings with interactive features such as embedded quiz questions, trimming out unwanted sections, and seamless integration with Blackboard.

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By making something that's more widely available and more flexible, we opened it up to learn new use cases that we never would have thought about, where faculty and students are getting more creative with using videos made with TechSmith Relay," said Leif.

Professors also appreciate the ability to communicate with their entire class, as TechSmith Relay provides a way to set up specific groups and email them with one click. Instructors also liked using Camtasia in tandem with TechSmith Relay, for more sophisticated editing, yet with the same easy sharing to TechSmith Relay and the LMS.

Overwhelmingly, faculty liked better flexibility to control when they record, and how much. "Before, it was hard to have a recording that included other things, such as student presentations. Now, it's easy to start and stop."



Shorter, more effective videos

Having more say in the timing of recordings had a bigger impact than the Committee anticipated. As adoption continued, they noticed a very interesting pattern.

Initially after rollout, instructors would go into the classroom and record the entire, hours-long lecture. Over time, however, they got more comfortable with the software and began pausing their videos. They started using the 'trim' feature, to cut out unnecessary times during class that didn't need to be recorded, such as professors answering 1:1 questions, small-group activities, or discussion that deviated from the lecture. Finally, they started only recording 10-20 minute sections of their lectures - the most essential parts - to make available to their students after class.

The flexible, on-the-fly nature was a chief catalyst in this teaching transition. "The fact that TechSmith Relay can be controlled by the actual instructor empowered the instructors to get to the point," explained Leif.

Interestingly, this is exactly what Instructional Designers had been encouraging instructors to do - keep videos short, concise, and only capture the most important components - but had not been successful with, until the new video platform was adopted. "We were shocked and our Instructional Designers were thrilled; they had been trying to get instructors to record shorter videos for years!," explained Daniel.

Moving towards a unified, flexible, and

user-friendly solution has helped get the technology 'out of the way', so to speak," explained Leif. "A unified platform has increased not only adoption of video as an instructional medium, but also good practices such as short, specific videos that are engaging, mobile-friendly, and can be assessed with things like grade center integration and viewership analytics."



Boise State found increased participation among students

More students watching, courses offered

Students also benefited from TechSmith Relay. Boise State not only found an increase in the amount of students viewing the videos, but also students viewing entire videos.

Videos are also a valuable resource for students to review content and study for exams. "We do a lot of calculations. They think they really know how to do that, but then they leave class and are not sure," explained Thomas Turco, Lecturer, Community and Environmental Health. "Now they are able to review that information out of the classroom."

Students are also having a better time navigating course videos within the LMS, with TechSmith Relay. "We're not hearing



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issues from students," said Daniel. "From a support perspective, that's a good thing."

TechSmith Relay allowed Boise State to offer a large, online medical terminology course with more than 220 students, fall and spring. Accommodating that many students at the same time in a physical classroom would not have been possible before, due to schedule conflicts and space restrictions. "Having something that feels like it's a live lecture that they can access, is really valuable," remarked Jeff Anderson. "I get a lot of comments from students that they feel like they're in class." With so much content to cover and demands of the medical program, Jeff noticed that students often watch every video.

Beyond viewing, students are also using TechSmith Relay to record their own content, creating projects and sharing them with instructors and classmates. The library just had TechSmith lecture capture solutions installed, including Camtasia. "A lot of students go to the library to work on projects for multimedia," said Jack.

Looking forward

With newly-reclaimed staff time and IT funds, Boise State now finds itself in a good position to expand and enrich their offerings. They're using the 60 hours per week they were spending on server management to train all faculty on TechSmith Relay and Camtasia, including more professors, students, graduate assistants, and teaching assistants. They are eager to work with instructional designers on how to integrate more TechSmith software into their educational approach. Boise State sees it as an excellent opportunity to bring people together by allowing clear communication and effective learning for their staff and students.

"We'll toot the horn a little more loudly, and do some more marketing in the next semester," said Jack.

Reflecting on their journey from hardware- to software-based video, Committee members encourage other universities to take a critical look at whether the most important aspects of rollout and adoption are actually what they have been touted to be.

"You need to step back and reconsider what your criteria might be," said Daniel. "If you think about the different perspectives at play here, it changes you need something that people will actually use. Students just click 'play' and watch the video. From a faculty perspective, you just hit 'record,' it's that simple. From an administrative perspective, more ROI. You have more people using the system."

"Ask yourself, why are you doing lecture capture?" said Daniel. "What are you hoping to get out of it? You want to enable best practices for instructional video - those best practices are all supported in [TechSmith] Relay."

Boise State University would like to recognize Stan Smith as an integral part of this whole project, which would not have been as successful without his help. Stan Smith, 1959-2016





Reference:

As part of the evaluation, the Assess Classroom Capture Committee took a critical look at the options available, and scored each option based on

essential features, functions, and overall performance for each set of stakeholders. Below are two analysis tools employed by the Committee which led to their pilot and selection of the winning video platform.

Table 1: SWOT Analysis of Options

Option 1: Do nothing

Continue the current processes with the hardware and software we have today

StrengthsUser familiarityBudget neutrality	 Weaknesses Would need to support multiple systems, requiring significant staff resources and inefficiencies
 Opportunities Could buy us time to revisit in the future and focus on other priorities 	 Threats Aging hardware presents reliability risks Missed opportunities to discuss alternative solutions/instructional techniques

Option 2: Refresh current solutions

Invest in new hardware, take any possible upgrades to hosting environment

StrengthsContinuity of services/systems for existing users	 Weaknesses Redundant video hosting/ streaming platforms on campus Would encumber significant new cost
 Opportunities Leverage knowledge of existing platforms to explore enhancements 	 Threats User base is on the decline Long term viability of current service providers is questionable



Option 3: Consolidate with Mediasite

Replace Educast/323 Link appliances with Mediasite units. Consolidate hosted content in Mediasite server environment, either on premise (hosted locally by Boise State University) or "cloud" (hosted by the vendor in a Software as a Service (SaaS) environment)

 Strengths Uniformity among all Boise State capture solutions Large International client-base 	 Weaknesses Very high licensing, hardware, and support costs
 Opportunities Can review workflows/policies for potential improvements 	 Threats If cloud-hosted by vendor, we saw the highest failure rates with this option in the pilot Vendor responsiveness was inconsistent during the pilot

Option 4: Consolidate with 323/Matterhorn

Refresh all units and replace current COBE Mediasite units with Educast/323 Link appliances. Move all hosted/streaming content to Matterhorn

 Strengths Uniformity among all Boise State capture solutions 	 Weaknesses Cost Does not meet some key criteria, including no editing options, or ability to override scheduled capture
 Opportunities An open source product with an active development community - could help develop improvements 	 Threats Long term viability of current service providers is questionable Missed opportunities to discuss alternative solutions/instructional techniques



Option 5: TechSmith/Software, plus alternative service offerings

Phase out hardware/appliance based recorders and implement TechSmith Relay solution as the standard video platform, both in and out of classrooms

 Strengths Scalable (could be added to standard software image) Fewer points of failure Single, integrated workflow solution from recording to editing to hosting 	 Weaknesses Does not meet some of the key criteria. E.g., Eliminates features/ criteria like automatic scheduling
 Opportunities Flexibility could introduce classroom recording technology to many more instructors Promote best practices for instruction Offer an array of "best fit" solutions 	 Threats Will be a challenge to incorporate multiple inputs/peripherals There may be resistance due to changing technologies/practices

Table 2: Comparison Matrix of Products Based on Criteria

	323 and Matterhorn	Mediasite- On premise	Mediasite- Cloud	TechSmith Relay
Enterprise Scheduler	Yes	Yes	Yes	Not natively
Ability to scale to a larger deployment (currently 25 rooms)	Scale increases cost and complexity	Scale increases cost and complexity	Scale increases cost and complexity	Extremely scalable with minimal impact on cost and complexity
Willingness to assist us through a pilot project (four months)	Yes	Yes	Yes	Yes



	323 and Matterhorn	Mediasite- On premise	Mediasite- Cloud	TechSmith Relay
Minimal hardware and software support required	Moderate to significant levels of support required	Moderate to significant levels of support required	Moderate to significant levels of support required	Minimal support required
Integration with our auth. system (AD, LDAP)	Yes	Yes	Yes	Yes
Pre-publish editing or review ability	No; but, edited video can be added through asset replace- ment	Yes	Yes	Yes, trimming with Relay, or fully featured editing suite with Camtasia Studio
Ability to play content on iOS7+, Android 4.2+, Mac OS 10.6+, and windows 7+	Yes	Yes	Yes	Yes
Ability to move content to other systems (standards- based files)	Yes	Yes	Yes	Yes, mp4. Platform can ingest YouTube
Ability for students to download video and audio files	Yes	Yes, option available; but, limited to AD rights. Would have to re- deploy rights	Yes, option available; but, limited to AD rights. Would have to re- deploy rights	No
Ability to deliver videos and audio through syndication/ rsss feed	Yes	Yes	Yes	No



	323 and Matterhorn	Mediasite- On premise	Mediasite- Cloud	TechSmith Relay
Ability to live stream both mobile and desktop devices	Yes	Yes	Yes	No
Ability to add closed captioning to videos	Yes	Only through an expensive 3rd party solution	Only through an expensive 3rd party solution	Yes
Ability for instructors to override a scheduled capture (start, stop, pause, or cancel)	No; but, could be added by using a USB key or if programed system through the Creston System	Yes, option available; but, limited to AD rights. Would have to re- deploy rights	No	Yes
Ability to schedule recordings without instructor intervention	Yes	Yes	Yes	No

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