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Education Industry Roundtable: Digital Signage Content Creation and Management on Campus

Sponsored by:



U.S. Office:
P.O. Box 158
Hinsdale, IL 60522 U.S.A.
312.265.6106
contact@plattretailinstitute.org

EU Office:
Emma Gads Vej 12 8600
Silkeborg Denmark
Phone: [45] 4045 8195
briana@plattretailinstitute.org

November 2011

About Digital Signage Expo

Digital Signage Expo is the world's largest international trade show dedicated to digital signage, interactive technology, and Out-of-Home networks. The 2012 event is being held March 6-9 in Las Vegas. Additional information about the Expo can be found at: <http://www.digitalsignageexpo.net>.

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The Platt Retail Institute (PRI) is recognized worldwide as an industry-leading expert in research and consulting to retailers, media companies, financial institutions, hardware, software, transmission, and other business enterprises seeking to impact the customer in-store experience. PRI delivers impartial business analyses and offers the strategic consulting necessary to organizations considering the impact and benefits of a digital communications network. PRI publishes the quarterly *Journal of Retail Analytics*, the quarterly *North American Digital Signage Index*, and other pioneering industry research.



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Education Industry Roundtable: Digital Signage Content Creation and Management on Campus

Universities are rapidly adopting digital communication networks (DCN) to meet a variety of objectives. These include, for example, emergency messaging, to increase event attendance, and/or to impact classroom instruction. Thus, learning more about DCNs is important to Universities considering deploying a network, for those who seek to improve the operations of an existing network, and to those firms that support a University DCN.

To address this, in July 2011, the Platt Retail Institute (PRI) conducted an industry roundtable to explore various perspectives associated with a university deploying a DCN. Four panelists, representing their respective institutions, were asked to respond to a series of questions. These generally addressed defining the challenges associated with deploying a network, content production and management methods, funding of the network, and whether the network is successful.

The following is a list of panel participants and their respective schools:



T. J. Tremblay, M.A.
Event Technology Coordinator
Event Media Support | Penrose Library
University of Denver



J. Mark Conde
Director, IS
Assoc. Director, CMPH Applied PH Informatics
Emory University/Rollins School of Public Health



Eric Himes
Director, Digital Media Services
Marshall University



David Fleig
Project Manager
Computing & Information Technology Division
Wayne State University



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The panel was moderated by Steven Keith Platt, Director and Research Fellow, Platt Retail Institute.

Moderator: Welcome and thank you to our panelists for participating in this important discussion. As Universities continue to adopt this new and emerging technology, many questions arise. Our objective today is to explore various issues surrounding the implementation of a DCN, with a focus on the complex topic of content creation and management. We are grateful to our panelists for agreeing to share their knowledge and experience, as we all can benefit therefrom. Let's begin with our panelists telling us a little bit about themselves and their school's network. TJ, if you please.

TJ: I'm T.J. Tremblay with the University of Denver. I am the Event Technology Coordinator here and our group manages all the technology for events. We have 40 digital signs on campus, of which I manage nine. We have four different departments that are all also under that same umbrella. I am the system administrator, so I work with the various groups on campus, ensuring that they have the correct access roles. I've been doing this for a little over six months, but I have had more than two years of digital signage experience.

Mark: I'm the Director of IS here at the Emory Rollins School of Public Health. We are a graduate school within the Emory structure. And I am also an Informatics faculty member, and we publish various content related to public health information in our career Informatics program. We have a crew here that covers a number of different areas, everything from our system support specific to the Rollins School of Public Health to systems, content development, application development and applied services that all work for the group that I'm responsible for. We just finished building a \$90 million new building for our school that included renovating part of an older building. And that was our opportunity to actually put in new signage systems.

Eric: I'm Eric Himes, the Director of Digital Media Services at Marshall University. Our department takes care of streaming video, video support for classes and events, and campus-wide digital signage. We started back in 2009 with a pilot through our learning management system. We now have 28 digital screens on campus that we manage.

David: I am Project Manager with the Computing & Information Technology division at Wayne State University in Detroit, Michigan. C&IT is the central IT operation for the University as a whole. We started our digital signage project a couple years ago, in late 2008, early 2009. We're currently operating 45 signs on a centralized basis. We're continually discussing the nuts and bolts of digital signage as a whole, and it's been a very interesting, complicated experience getting the signs up and running – not in a bad way, but it's certainly more than just hanging a display on the wall.

Moderator: David, you brought up something interesting that was certainly one of the topics we wanted to talk about today. You alluded to challenges that you are facing. Maybe you'd like to expand on that in terms of challenges that you encountered during your deployment?

David: We never really thought that it was going to be simple. When we launched digital signage, our goal was to launch it as a University-wide collaborative effort across as many schools and colleges as possible, and across multiple campuses, and then try to get as much buy-in from the different constituents as we could. The underlying content goal is to showcase important people, news, and events, and inform ourselves and our visitors about Wayne State. And then, in addition to that, to build unity, which would be departmental and college recognition, and the Wayne State University brand.

What was happening at the time was that the people in Marketing called me up one day and said, "You know Dave, our web portal is being used to disseminate news and information, but it is just not hitting the mark." That



coupled with hanging paper all over the place, was something that was really troubling to our Marketing department. The Internet really was not a good in-your-face means to get information out to the students, the faculty, and the staff. Ultimately, we thought that digital signage might be a viable way to do so and that's where we are now.

Moderator: Let's now address the challenges related to persuading other schools and departments within a University to participate. TJ, can you give us a little bit of a background on the program and how it arose, including some of the issues you encountered?

TJ: One of the things that I found, especially with our campus because we are very decentralized, was getting all of the departments on board under one system is certainly a challenge. As you probably know, there are hundreds of these different systems out there and trying to get one universal, in our case, management software that did everything was definitely challenging and something we're still working to try to complete. That's my main initiative right now; trying to get one unified front on this because we are working with the Communications department on branding as well. And, having different software packages out there, just within the campus, makes that tough. So, from the time I picked up the administration role, that's what I've been trying to do.

From more of a technical standpoint, since we've started our management software, we've had to get two different departments up onto newer players and make sure that they are compatible with our content management software. Again, that would be the biggest hurdle that I've had to fight. From there I've found that most departments are good at being self-sufficient once I have power users who can train the rest of the staff within each department. From an administrative role, I try to keep a hands-off approach and allow different departments to work and keep templates consistent, and then they can control their own content.

Moderator: Great, thank you. Eric, a little bit about the background and challenges you faced, if you would.

Eric: Our challenge wasn't so much with the install or getting people to work with our management software. We kind of hit that early. We had a couple of groups on campus that were supportive. Even our student body president at one time had run on a platform of bringing digital signage to the student center. We had a couple of other groups that were looking to do their own thing. So we kind of jumped on that early and got them all on board. We got lucky with our first pilot that was ad-supported. The thinking at that time was, "It's going to come in for free; oh, I don't have to do anything." So we had a semester of that and once that got going and everybody saw the power of the centralized system, everyone was on board.

Our challenge more so is the way we're supporting the DCN financially, making sure we're not pricing it so high that it's better for them to go with another system. Departments have an option of maintaining the signs themselves; and, if they do that, getting people to use the system to its full advantage is a challenge. We have a couple of signs in our Science Department that they maintain themselves. But it took a year for them to get going, get interested, and be persuaded that they needed to customize the templates for the College of Science, and develop content for those students who are going to be walking by that sign. We had that in other areas too.

Moderator: So, Eric, essentially you give the different schools the option to buy the service from your office or outside from somebody else, a third party?



Eric: We encourage them not to buy it outside. We push it real hard to buy through us; we just don't want to price ourselves out of the market.

Moderator: Mark, in addition to the screen being placed in public areas at the School of Public Health, are you using panels in the classroom, for example?

Mark: We underwent a significant redesign of a lot of our technologies both in the classrooms and in public areas, as well as our conference rooms and break-out areas. Focusing on the signage, we have a range of displays. The largest is the Jumbo Tron, which is a combination of 48 screens (Microtiles) that is about six by 11 feet. It is in the main area of the one building when you first come in. We have 60-inch LCDs placed at the department boards that are not only used for signage, but also for meetings. They also could be used for plugging in your laptop and we also have cable channels that we run on these and use them for information in that respect.



Forty-eight Microtile screens make up the largest digital sign in Emory University's Rollins School of Public Health.

Moderator: The next topic I would like to focus on is content production and content management, including the associated expense. At the end of the day, the technology is great but as we all know, if the messaging is problematic it doesn't matter how good the technology is. David, please tell us a little bit about how, at Wayne State, you manage the whole content programming issue.

David: Our content/image control model is as follows. The Marketing and Communications department handles the image and the design material almost exclusively. They also are responsible for taking care of the central content for the University. The local content, which I would define as the school, college, and the department content, is determined by each individual at the local level. And that material is then fed to Marketing and Communications and incorporated into a template so that it can be presented in a consistent manner University-wide, whether it is on one sign at a particular college or department, or whether it appears across the entire University.

A screenshot of a digital display board at Wayne State University's School of Business Administration. The board is divided into four sections. Top-left: "University Events" listing "Center for Peace and Conflict Studies" and "Muslim Student Association" events. Top-right: "School of Business | Events" listing "MBA Informational Meeting - Oakland Center" and "Academic Advising - Oakland Center". Bottom-left: A graphic of hands washing with the text "Stomach Flu Season" and "Don't get sick - Wash your hands!". Bottom-right: A live feed from CNN with the headline "LEVEE BLOWN UP TO SAVE CITY". The display also shows the date "Tuesday, May 03, 2011" and time "11:24 AM".

A zoned screen at Wayne State University's School of Business Administration includes a live feed of CNN.

And, the way that tends to play itself out is that we have a few different scenarios that we create within Marketing. We have signs that highlight just the University in general, that might consist of general University events, University news, weather, time, so forth; shared space, where

we have portions of the sign dedicated to University events and a portion of the sign dedicated to a college, school, or department; and shared time, where we might highlight a particular academic scholar or a VIP or a distinguished professor, for example, and they'll capture the entire screen for a portion of the time. Another element of our program is to include QR codes that can be scanned with a cell phone. We include those on our signs so that folks can grab them if they want to and read more about the material later.

On some of our larger signs, we put together multi-panel arrays. We put up a combination of information local to the college, University information, and national information. An example of that can be found at our School of Business Administration, where one of the four panels runs a CNN feed continuously.

Moderator: Do you find that the process of running it through a coordinator is successful in terms of maintaining brand control? The flip side of that is: does that ever turn out to be: 1) expensive and/or 2) a bottleneck for you in terms of scheduling and programming?

David: Not really. Our Marketing team has made a commitment upfront to support the project as a whole, and the branding and content management is so critical. The example that I would like to give is this: imagine turning over the responsibility for content to a student assistant and having them grind out some PowerPoint display with whatever look and feel – fonts, colors, etc. – they choose and putting that up on a digital sign. It's just not going to work. Although it might show up, who knows what the effect is going to be? So is it a bottleneck? No, quite frankly the departments and colleges are grateful for the marketing support. From a customer service standpoint, they pretty much only have to provide the information and Marketing will help them with the development and maintenance of that information.

Ultimately, as they learn the system and become more competent at using the content manager software, they can develop content themselves. For the folks who are familiar with digital signage software, there are varying degrees of permissions that can be put in place to help maintain consistency. For example, you might be able to change the words, but you can't change the font, you can't change the color, you can't change the look and feel, you can't change the background. So there are ways to maintain some process control without giving the end user free rein to do whatever they want. The end users' objective is to get their information on the screen and have it be suitable for their needs. Ultimately, they're probably less concerned about whether the colors are right or whether the font is right, and that's where Marketing plays an extremely important role in what we do at Wayne State.

Moderator: Eric, my recollection is that you have somewhat of a centralized control process for content. Is that accurate?

Eric: We have a mixture of that. We let the departments design a lot of their own content and somewhat prefer that because of our funding model. We do have a student who works for me and we charge back for his services to create content. So he's creating content, and I do have oversight on what it looks like. We control the template centrally and then zone it out, so we have news, we have events, we have weather. Then, there is a large zone for events on



An interactive screen at Marshall University includes event information, national news, and way-finding.



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campus. I would say 90 percent of what our University does is sent to me for the appropriate zone and I'll post it. In some of the local colleges, like the College of Science discussed earlier, they have total control over their signs, so it can basically look anyway they want. They have the content manager software, so they design their own messages. The stipulation is that they have to run 50 percent of campus central content to be on the network.

Moderator: TJ, how are you handling the content issue?

TJ: Again, we are a pretty decentralized campus and walking into this role, I found that a lot of the departments were doing what they wanted. And one of the things that I have been trying to work toward is implementing roles. The roles start with the content creator and the content approvers. The content approvers are usually the managers within the departments who will have some sort of handle on what the rest of the campus should be portraying as far as a message.

I have been working with the University's Communications Department, which is our own marketing department, to steer towards the branded sign which would be a template that we hand the departments to ensure a unified look and feel, and then the departments themselves would handle the content and really concentrate more on the message as opposed to what it looks like, such as colors and fonts. I now have the roles in place, so we do have some sort of control on it; it's just not where we'd like it to be.

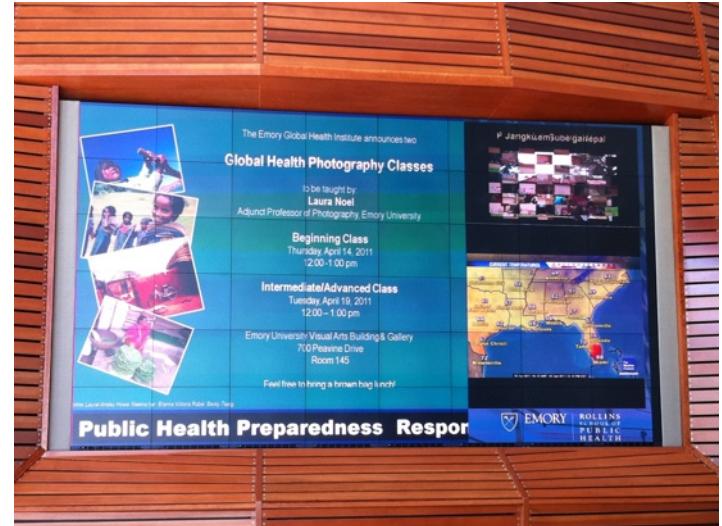
Moderator: Mark how about down at Emory? How are you addressing content?

Mark: We have about 14 different, distinct displays that are in the departments or open areas that are content-specific locations. Most of the content is being submitted or content requests are submitted to our central IT department. We ask for certain types of information to be submitted with certain formatting, and we will put it up on the particular device they want it on.

We do have very department-specific systems and media displays. What we've done is we've set up responsible people in each department to put up the content using already prepared templates. We make sure that they understand the way of doing it in terms of pixel structure and appropriateness of putting different kinds of complex media out there within their need. When we get to something like

needing video or they're trying to do something animated, again we come back to requiring that they submit a request to our central IT department, and then we help them put it together.

In some cases the content is subdivided so that we may control say three-quarters of the screen. A department owns one particular block on the screen and they have free rein within a particular structure of content delivery, maybe



Content in specific zones of the screens at Emory University is provided by various departments using templates and guidelines for content structure.



just PowerPoint, for example. And of course, they have some responsibility for appropriateness when it's being displayed on behalf of the department. The last thing we do, because of the software we chose, and we picked this product specifically for this reason, is use an authorization setting. So for example, if there are two administration folks in a department who can submit content in the system, then of course it has to be reviewed or looked at by someone higher up than the content administrator before it is released into the schedule. So that's our generalized approach.

Moderator: One of the things we haven't talked about is how you are funding content development. Eric, you mentioned that you charge back the departments for some production. Do you have a department budget for the balance?

Eric: In terms of supporting the signs, we have a couple of options. They can take care of it all themselves and pay an hourly fee to us to cover maintenance, content creation, or whatever else they may need at the time. There is also a plan under which they can pay a fee per sign. We do cap that after reaching a determined number of signs, for a year's worth of maintenance, which also includes upkeep on the signs, troubleshooting and any content creation they need. Most of my content creation gets submitted that way and actually all of it goes to a student on staff. The budget for the system software itself is centrally funded.

Moderator: TJ, how are you approaching the expense of producing content?

TJ: The content itself is all produced from within the department. For our library, we have a graphic designer who is paid hourly but it is all out of the individual budget that's again specifically designated for content. The signs themselves are paid for by the department and the content management software is centrally funded from our library, which is where our event media support group is located. So that's the only part of it that is actually centrally funded; each other part comes from the department itself.

Moderator: Mark, how is your school funding the cost of all that great content?

Mark: We are really somewhat similar to the other schools. The infrastructure and licensing of the software to deliver content to the system is generally covered by our central budget. It is relatively straightforward as far as providing simple content so if they want a PowerPoint fixed screen or they want a picture screen with a particular message, we cover that through our servicing indirectly. Where we start charging project fees is if they want something complex, like a full production video. Mostly it's really rather simple and we just do it as a customer service.

Moderator: I know we touched on this little bit, but I would like to zero in on this a bit more. David, please tell us about the types of content and also the formats that you are using for content generation.



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A digital sign is set up in a common area in Wayne State University's College of Nursing.

David: As I mentioned earlier, right now we break the signs down into three or four categories, where we are highlighting just the University, sharing on the entire sign or we are sharing the space between the University and an individual department or college. We time share so that we give the department, college, or VIP or some special event the full screen for a certain amount of time and then we may switch back to the shared sign or just the University content. With some of the larger signs we might include a CNN

feed as I mentioned about our School of Business Administration. As far as the content goes, we haven't done anything yet with Flash. We run the CNN feed, which is live video. A lot of the other information is pulled from Marketing's RSS feeds and then formatted into the look and feel of what we want and overlaid on a custom-designed template.

Moderator: TJ, how about you?

TJ: For the most part it is department-driven, but we do see a lot of PowerPoint that is kind of integrated into the sign and that's mostly because it's the easiest for the end users to work with. That said, I have been working in the library to get our live streams onto our own signs. So that, again, is something that we are working toward but everything else is going to be your basic event text postings and current events for student gatherings and things that are really focused toward each individual department, because they are the ones putting up the content.

Moderator: Mark, types of content and formats used at Emory's Rollins School of Public Health?

Mark: We use all types of content from static text boxes, graphics, to animated or full motion videos. It really depends on what we want to combine for the message that we are showing that day. Some of the content is pulled from a website to show things like a weather forecast or the location of the nearby shuttle bus. Much of the graphics are just JPEGs that are shots of projects and people in our public health programs or events. We pull events from our calendar system to show reminders for the day. Also we put up a giant QR code so people can get to the entire calendar event web page with more detail. We use a ticker at the bottom of most screens to recognize accomplishments and to post quick alerts for the day.

Moderator: And Eric, types of content and formats?

Eric: What I call our main content zone, the zone where the entire content request goes is running either a graphic of some sort or an animation. We provide the resolution requirements and the graphics are created in the program of choice by the creators and sent to me. We do have a few content providers that will do animations and we ask for those as a Windows Media or Quicktime file. Unless it's a last-minute request, the content my department creates is also animated. The other zones on the screen are filled with dynamic content, RSS feeds, data from an SQL database, weather, and time and date. We have four touch screens that provide way-finding and departmental information. We also run an IPTV system on campus and are working on integrating those into our library signs that run 24/7.

Moderator: In your opinion, does the University that you work for regard these systems as helpful and successful? David, maybe you would like to tackle that one first.

David: I would say in terms of itemizing successes, we are definitely getting attention because we have students, faculty and staff coming up to us and telling us they've seen the signs and they look great. So we are getting quite a bit of positive response. We don't have that quantified yet, however, but that's the feedback we're receiving. They like everything from being able to see the time and the weather to being able to watch CNN with the closed captioning.

From the content providers' perspective, the fact that our Marketing and IT teams centrally support it and coordinate that activity with the individual departments is perceived as good customer service. The end-user really likes it. I guess the bottom line is that when we put the signs up we had one essential criterion, which was that we would not put up any dark screens.



Don't hang a sign if you are not ready to activate it on the spot. We wouldn't put it up and so, as a result, the customers have always seen it working, and that has resulted in a huge pay off for us in terms of positive PR for the project.

Moderator: Eric, how about you, helpful and successful?



In a survey, 96 percent of students at Marshall University said they noticed the digital signs.

Eric: I think that we are very successful. We had a study conducted during our first pilot. Ninety-six percent of the students noticed the signs, and 66 percent of them can actually recall something on the sign, which led us to keep going with it and get something implemented after that pilot ended. Our CIO loves the signs; anything she can put on it she does. It's one of her first go-to places. And another good testament to our success is that we started with 10 signs in the spring of 2010 and in a year and a half we have tripled that number.

Moderator: Mark, has it been a helpful and successful program for you?

Mark: I can really only offer a qualitative assessment at the moment. We haven't measured it, but I can tell you what we have

seen and what the behavior tells us. In fact, we do believe that it's fairly successful.

In the public areas, we have definitely had more success than the departmental ones. Departments are a little slow in adopting. I don't think they quite understand the media yet, so for those signs, I don't know if they have a good assessment of their success or failure. However, with the main sites, we do get a lot of people telling us that they like what they see. They like the videos and content. And they like how when there are emergencies in the world, we will flip it over to CNN and they can sit there and catch what is going on.

The second thing that I have noticed is a lot of students here are starting to want to use it more. We work with the SGA (Student Government Association) and give publication rights to it occasionally so the SGA can post messages. And we have some of the students who are in Health Communications starting to come ask questions like "Can I use that to experiment?" They will come in and play games to see if they can change behaviors, like getting people to stop smoking, by using the signs. That has actually been quite fun because I can see that interest is increasing.

In addition, we take the live feeds from some of our classrooms, auditoriums or lecture rooms and re-route those as overflows onto the signs. So people get to watch a lecture that they can't get into the rooms to see. We actually have had more requests for those, so it's not a quantitative assessment but the fact that people continue to ask for it is a good review.

Moderator: Mark, are requests being made to quantify the media?

Mark: I don't think that anyone has asked us to do that. I don't really have to explain or justify the budgeting right now because from a qualitative standpoint, people are satisfied and happy with the investment.

Moderator: TJ, is your program successful and helpful?

TJ: We also haven't had any official studies done so everything I'll be telling you is pretty much my own observations. We have had digital signs on campus for four or five years now and I would say on campus there are probably 40 different signs.

I think the fact that over the last year, and specifically over the last six months, we've made a concerted effort to unify all of the signs and move toward a centralized approach, and that is good news. A lot more departments are starting to see the value in having better global messaging even though each department is still putting out its own individual content. So we have six signs that are all under one content manager and that's growing to nine, and I think that's a positive indicator. This shows that it has been received positively. I know in the library in particular, it is very hard to get new things on their sign because it is almost too full. The content manager and people in that role like to keep a pretty tight lid on how many slots are given out. That being said, I think that it is being received very well and I can only see growth in the next few years.

Moderator: David, what advice might you give to a University that is first starting to embark on this in terms of what they should make sure that they pay attention to?

David: When you consider this from the perspective of lessons learned, I would summarize it as follows: You absolutely need top-down support for policy and funding, and you really need to have a clear goal as to what the signage project is going to be. In addition, there needs to be buy-in by the entire team that is going to participate. I think this next one is an important caveat: it is easier to centralize before several departments adopt their own standards. It is pretty hard to undo what folks have done locally and convert it to a centralized operation after the fact.

And then, as with any sort of content-based system, it is the content that matters. It takes longer than you might think to get a project like this off the ground and up and running. You can't get everyone to play; not every department is going to go for it and that's fine. I suppose that there are several challenges that we faced, but the main takeaway from an IT perspective, is to centralize before everyone adopts their own standards.

Moderator: Great advice. Eric, how would you describe your lessons learned or key takeaways?

Eric: I would have to agree with David on all of his points. Definitely know where your funding is coming from and you need to plan for replacement cycles and any costs that you are not expecting. For example, we passed on the networking and maintenance fees and software license fees, not for the signage software but for the computers that are connected to the network. Replacement of those screens and replacement of that hardware by the department needs to be thought about.



A digital sign provides way-finding information in the Library at Marshall University.

But the content, as we've been saying, content is king. You need to have fresh content. If we run the same thing over and over again, no one is going to look at it. An example of this is that we had a video wall go in before we had our digital signage project and the school wanted it, but nobody knew where the content was coming from. The video wall happens to be running the same content that it was running when it went in four or five years ago.

Also, as far as centralized management of the system goes, do it beforehand. I agree with David totally on that. I feel that if we had not jumped on that and everybody had been doing their own thing, we would have had a tough time.

Moderator: Mark, what are your lessons learned?

Mark: I agree with the other two gentlemen on centralizing first because it would be essentially impossible to try to bring everybody together and begin to understand how to use the infrastructure in any other way. So we are lucky that we did start up with a centralized mentality rather than to start adopting that after the fact.

I would like to add a few additional comments. The content is absolutely what drives the success of this and they'll end up being bored and disliking it if we can't continue to not only keep it fresh, but also I'm getting requests to continue to get more and more sophisticated. So I find myself in the position of helping decide where content goes. I am having to develop a series of projects to actually organize the group in the school that will advise on what messages they think we should focus on in any given week. For example, they might say, "we are going to talk about diabetes and eradication of diabetes," and then they will drive the content that addresses their intended topic. Right now, it seems like we are still just reacting and running content about the event of the day, but in the longer term, that is not going to be very effective.

The second thing I would add is that we are finally starting to have enough time to start teaching people, particularly in the departments, about best content practices. It was interesting to hear the other person say that not all departments are participating, and I mention that too but mostly because they don't understand the medium. They don't really understand how to post content on the sign that is being driven by the department. So effectively, we need to start teaching people because you can't do it all centrally and you can't know every bigger theme or driving factor that is appropriate on the screen. It should be driven by some of the users.

Moderator: TJ, what recommendations do you have?

TJ: Of course I think our school is a good example of how not to start off. I can, with experience, say that I really wish I was involved with the network four years ago to start off because we could have tried to start the program with a unified front as opposed to trying to do it backwards. So obviously I could echo what the other gentlemen had said on that.

One other thing that I have noticed is that sign location actually makes a difference. I know that we have one building, in particular, where we ended up having two different signs because the first one wasn't necessarily put in the right place. So they ended up having two signs that pretty much had the same message and same content. Whereas if they had been put the screen in a better location initially, that probably could have saved the cost. We could have had another sign in a completely different location.

Of course, planning and patience are important. These projects do take time and I think that is something you need to plan for. You need to know that and have a centralized plan from the beginning. That would be the best approach.



Eric: I have a question for the other panelists. Is anybody doing audio or are all the signs silent?

David: Most of our signs are silent.

TJ: Same here.

Mark: We mix it. Some do and some don't.

Moderator: We have found that audio can be very difficult to successfully integrate into a DCN. However, it can be a powerful addition when executed correctly.

Thank you to all our panelists for their insights. And a special thanks to Digital Signage Expo for their generous support of this Research Article.

Editor's Note

This Research Article follows several recent research projects that PRI has undertaken in studying DCNs on campus. These include our Research Report titled "Communication Effectiveness in Higher Education," and our Research Article titled "Universities Embrace Digital Signage at an Accelerating Pace." Our next major research project in this area is our Working Paper titled "Design of a Measurement Model to Determine the Value Derived From a University Digital Signage Network." We welcome the participation of additional schools to serve as test sites and/or serve on our review panel.



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