

Creating a New Channel for Campus Communication

Mark Allen Nakamura
Colby College
4180 Mayflower Drive
Waterville, ME 04901
(207) 859-4357
manakamu@colby.edu

ABSTRACT

Walk around any college campus and in less than a minute you'll most likely notice a plethora of flyers and posters. The overwhelming result can be hundreds of posters competing with each other on cluttered bulletin boards, sidewalks, and even bathroom stall doors.

A team of administrators and IT staffers at Colgate University set out to find a new communication tool to minimize the poster clutter effect and to provide students an innovative way to promote their events. The solution? A campus-wide network of six plasma display screens (50" diameter) located in the student center, library and the downtown bookstore. Each display continuously plays a queue of slides, videos, and flash movies from a central streaming media server. In the first semester of operation, over 600 slides were produced for the displays.

In this presentation, we will cover the technology (Windows Media Server 9) used to setup this network of displays and discuss the level of support involved in creating content and maintenance. In addition, we will go over other technologies and solutions that can be put in place to create a similar network on your campus. The number of possibilities is endless.

Categories and Subject Descriptors

I.3.2 [Computer Graphics]: Graphics Systems – distributed/network graphics, remote systems.

General Terms

Management, Design, Experimentation.

Keywords

Plasma displays, graphic systems, network graphics, multimedia, video.

1. INTRODUCTION

In the summer of 2003, the O'Connor Campus Center, the hub of student life at Colgate, went under an extensive building renovation. In an effort to create a more serene environment for students, it was decided by the administration to remove a good

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majority of posterboard where students were at liberty to post flyers, posters and advertisements. In addition, students could no longer hang bed sheets (aka COOP sheets, a Colgate tradition) on the side of the building to promote their groups' events.

As a solution, the administration decided to install two 50" plasma display screens in the campus center as the new medium for students to promote their campus events. For the first time ever, students were no longer limited to the sole option of creating static three-color posters. Instead, they could create flashy commercials with applications such as Final Cut Pro, LiveType, and Macromedia Flash or colorful slides that would cost a bundle to print. The overall result is that the displays provided a highly visible medium for slides and posters that no cluttered posterboard of hundreds of posters could ever offer.

2. THE TECHNOLOGY BEHIND THE SCREENS

2.1 Plasma Display Screens

The plasma displays screens that were installed on campus were Panasonic 50" widescreen high definition screens. Each screen was connected to a networked Windows XP Professional computer and Windows Media Player 9 was used to connect to a client side playlist located on an IIS server to display all the media files in fullscreen mode.

2.2 The Server

After a thorough review of several applications available in the marketplace, ITS decided to use Windows Media Server 9 for this project. The selling points of adopting this server technology were the ability to create multiple playlists for different groups, store all the media files in one central location and overall reliability. The plasma displays have been live at Colgate for little over a year now 24/7 and there has only been one time when the server was down.

2.3 Content That Can Be Uploaded

In order to utilize the streaming features of the Windows Media Server, files need to be in the following two formats: jpegs (.jpg) for static images and windows media format (.wmv) for videos. For videos, it's best to save the project file as a DV source file and encode it with the windows media streaming codec. Programs that can be used to encode media files are Windows Media Encoder and Cleaner XL.

Macromedia Flash files (.swf) can also be added to the playlist but there are some extra steps involved. Unfortunately, Flash files

cannot be streamed from the Windows Media server. Instead, the file must be located on a web server and the playlist must be manually edited to point directly to the location of the Flash file.

2.4 The Playlist

The playlist is an XML file that allows you to set the order of the content to be displayed and to specify the location of the media files. There are two options on how to setup the playlists.

The first is to list every file that you plan to display on the plasma display screens in the playlist. One of the best benefits of this option is that a specific time can be set for the display of static images such as jpegs (the default time is 29 seconds per slide). The downside is that when you need to add and remove content, you have to manually edit the playlist. This can be especially cumbersome when removing content, which would involve a two-step process of deleting the file from the media server and then removing the file reference in the playlist. This option is recommended only if setting a specific time per slide is highly pertinent to the project.

The second option is more flexible and utilizes wildcards where it's not required to list every file that will be displayed on the screens. Instead of uploading all the content to one folder, it's possible to create a hierarchy of folders to store the media files. By utilizing wildcards, the playlist can be setup to point directly to a folder and be instructed to play all the media files located in the folder and subfolders. This makes the management of the files a whole lot easier since the playlist does not need to be updated every time a file is uploaded or deleted. In addition, different groups of people can be granted access to certain folders. The only downside to this option is that the default time of 29 seconds is used to display static images and this cannot be changed. Although this may sound like a long time, it worked perfectly at Colgate since it gave people ample time to read certain text heavy slides.

3. CONTENT PRODUCTION

When the plasma displays were first launched in the Fall of 2003, there was a lot of confusion from students and departments on how to create content for the displays. There were ongoing questions about the resolution of the slides; what applications could be used to create content for the displays; and in general, what was possible.

To help ease the transition for the campus community, a style guide was published with information on the applications that could be used to design slides, dimensions and page layout of the slide, general slide design advice, and how to submit slides to be posted to the plasma displays.

3.1 Creating Static Content for the Plasma Displays

In general, any graphic design/imaging software product could be used to design static slides for the plasma displays. For individuals who had limited or no experience designing posters, we recommended that they use Microsoft PowerPoint or Publisher. These applications have a multitude of themes and

graphics that make it easy for the user to design an eye-catching slide. Intermediate individuals who had prior experience designing posters were welcome to use more advanced imaging or graphic design software such as Adobe Photoshop, Elements or Pagemaker.

When people first saw the plasma displays, their initial thoughts were that the slides had to be very high in resolution. After a lot of testing before the displays were released, it was determined that a 96 pixels/inch resolution worked perfectly. For PC users, resolution became a non-issue. Only Macintosh users had to adjust their file resolution to 96 pixels/inch.

Once students and departments started to design slides for the plasma displays, it became quite evident that the traditional layout chosen by most people was a portrait or vertical layout. Unfortunately, this layout does not convert well to the horizontal 16:9 aspect ratio for the plasma displays. If a slide had to be posted to the plasma displays without being reformatted, the result would be the poster centered on a black background with about two and a half inches of blank space located on each side. This made the poster very hard to read, even from a close distance.

To help people maximize the screen space of the plasma displays, a mandatory dimension for all static slides was set at 8x6 inches or 768x576 pixels. In addition, it was recommended to use all the space in the slide and to avoid using small type. The bigger the type and less subtle the design, it was highly likely the slide would have more of an impact when viewed on the plasma displays.

The last part of the process involved optimizing the slides. Individuals were required to submit a jpeg or PDF file to the Web Designer, Mark Allen Nakamura via email. If the quality of the file was poor, to speed up the posting process, often times it would be required for the students to submit their source files to the Web Designer who could make the necessary changes before the slide was posted to the plasma displays. Even well designed slides required some minor tweaks before they were posted.

3.2 Templates

To speed up the process of creating slides for certain groups and calendars, templates were created for quick editing and production. These templates were available in Adobe Photoshop and Microsoft PowerPoint formats. This system of templates was extremely helpful in the production of slides for the Colgate Bookstore, film series, athletic events, and events from the Colgate online calendar.

3.3 Creating Video/multimedia Content

Students and departments also have the option to submit videos and Macromedia Flash movies. This was not as quite as popular as designing slides since it involved more time-intensive steps such as capturing content, editing, design and encoding. For the first year the plasma displays went live, there were a couple of wonderful videos that were posted on the plasma displays designed by students and the Web Designer.

Students could use any video editor software program to edit their movies for the plasma displays such as Final Cut Pro, Final Cut Pro Express, Adobe Premiere, Video Factory, and Vegas Video. iMovie could not be used. The main reason for this is that in order to encode the videos using the Windows Media codec, the final movie needs to be saved as a DV source file. iMovie is the only editor that does not allow you to do this.

Once the file has been saved out as a DV source file, the next step is to encode the file for Windows Media 9. Applications that can encode the source file are Windows Media Encoder and Cleaner XL. If the final video will be displayed over a local area network, it's best to select the highest bit rate possible. For videos that were played over the Colgate network, selecting variable bit rate encoding and the bit rate of 1.09 mb/s worked very well. The only problems we experienced in streaming videos to the plasma displays were network problems that either stalled or slowed down the download. Videos under 20 MB usually took only a few of seconds to download even when the network was slow.

4. PLASMA DISPLAY MANAGEMENT

Creating a plasma display network is similar to designing a website. Once a new site is launched and available to the public, within six months the site looks outdated if it's not updated on a frequent basis. The same is true about creating content for a plasma display network but instead of six months, it could only take a week before the content looks old and repetitious.

4.1 Commitment of Staff Resources

The complexity of the plasma display network will determine the level of support and staff resources that are needed to keep the project running smoothly. If there's only one screen with a couple of slides that do not need to be updated on a daily basis, it's quite possible that a staff member can manage this project in his or her spare time.

On the other end of spectrum, at Colgate, the plasma display network needed to be updated a couple times a day six days a week by adding and removing content. This was due in part to the project objective to post all of the events from the online calendar onto the plasma displays each week. Fortunately, templates helped speed up the production of a good majority of the slides.

In the fall semester of 2003, over 600 slides were produced for the Colgate plasma displays. About 85 of those slides were unique designs that required several hours or more to complete. This project requires about 35% of the Web Designer's hours per week to maintain and to create new content for the plasma display project.

The end result of the Colgate plasma display project was very successful. All the slides and videos were of exceptional design caliber. This can be attributed to the number of hours spent keeping the displays live with fresh content and well-designed content. Although only one person managed the plasma display project at Colgate, many of these tasks can be divvied up amongst a group of people to even out the workload. It is highly recommended that the crucial tasks be assigned to staff members who have the time to commit to the project.

4.2 Tasks Required

In previous sections, a great detail has been given to the process of designing slides and videos. These tasks are probably the most time consuming and complex tasks that are necessary to keep a plasma display project running smoothly. However, there are several small tasks that may not take much time but do add up in the end.

Management of the servers and computers

If Windows will be the platform of choice to connect to the plasma displays, it's a definite guarantee that weekly maintenance will be required. The Windows Media Player may lose its connection to the media server due to network problems; annoying Windows alerts may disable the full screen mode; and automatic system updates will require the computer to be restarted. Be prepared for this.

Arranging content

If you adopt the wildcard version of the playlist where you will upload your content to folders, it's a guarantee that you'll spend some time creating the order of the files in which they will be displayed on the plasma displays. Think of it as rearranging photos in a specific order in a program such as iPhoto but instead of arranging photos by the click of the mouse, you'll instead need to rename the files with a hierarchical format (01_slide1, 02_slide, . . .). This can take a minute to complete but it can be tiresome if you have a lot of slides.

Deleting content

Sounds like a non-issue but if the network that is installed at your college follows the same protocol discussed in section 2, there's an unfortunate procedure that must be followed when deleting content. It's required to temporarily stop the media server in order for files to be permanently removed from the playlist. This can be done rather quickly but it is yet another task to perform that adds up in the end, especially if you have to perform it three times a day. If a file has been deleted without the server being stopped, the file will continue to appear in the playlist although it does not appear on the server.

5. OTHER TECHNOLOGIES

The solution that Colgate University put in place is not the only way to go if you're interested in creating a similar network. There are several other technologies that can be used and plasma display screens are not even required. Regular computer monitors can be used and even the playlists can be streamed to television.

5.1 Apple iPhoto

There's really only one other solution that compares to the Windows Media network put in place at Colgate: Apple's iPhoto utilizing its rendezvous technology. By creating a shared album on one computer, other computers can connect directly to the album and display the slides at full screen – even with synchronized music, something that is not possible with the Microsoft solution. However, this solution's success is probably dependent on how friendly your network is to Macintoshes. Also important to note, Macs can support a true 16:9 aspect ratio which means that there's no horizontal and vertical distortion of the

slides when displayed on the plasma displays. Overall, Macs are more reliant to use 24/7 in comparison to PCs.

5.2 PowerPoint Movies

PowerPoint movies are a great way to create a slide show of images with animation and music. However, the PowerPoint movie must be initiated directly on the computer connected directly to the plasma display. There are no networking options available for this solution.

5.3 Catalog Slideshows

There a multitude of asset management programs on the market such as Extensis Portfolio and iView Media Pro that allows you to create a catalog of slides that can be compiled into a slide show with music and screen effects. Some of these programs allow network connections and even some scripting support.

6. CONCLUSION

A plasma display network is an innovative way to provide a new medium for students, departments and organizations to promote their events. Although individuals are accustomed to designing posters in the traditional format, at Colgate people are seriously considering utilizing the plasma displays before they start the design process for their posters. This has resulted in higher quality posters designed by students and departments that require little optimization before they're posted to the plasma displays.

As for producing multimedia content such as videos and Flash movies, this will take some time for a good majority of users to start using this technology. It's anticipated that as students, staff and faculty become savvier with imaging and video editing software, producing multimedia content should become a non-

issue. So far in the last year there have been a number of really good videos that have been produced for the plasma displays by students and staff.

Creating an extensible plasma display network provides boundless opportunities. A whole campus network of displays can be configured with a different playlist for each location where a display is placed. Imagine going to the campus theater and seeing a display showing posters, production notes and slideshows of past productions. Or the athletic center where team schedules or video clips of past games shown with crisp ESPN style graphics. In this present world where the internet and DVDs are saturating every part of our lives, providing this type of technology not only enhances the experience one may have but can be a major selling point to technology savvy college kids.

For a plasma display project to be successful, commitment of staff resources is highly pertinent. Content does not magically create itself. Do not implement a plasma display network without seriously considering the staff issue.

Lastly, we believe the solution that was put in place at Colgate University will be highly successful in other college environments.

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