

COMPARING VARIOUS DIGITAL SIGNAGE SYSTEMS

Elliott McCrory

Last Save: 10/30/2019 3:30 PM

Showing digital content on large displays to the public is commonly called “Digital Signage.” This document attempts to inform potential users of digital signage about the most common choices at Fermilab.

DETERMINING YOUR USE CASES

What is it you want to do with digital signage? Answers to the following four questions will inform you on the sort of system you should use.

Note that the job of creating and updating the content is never-ending. You must have someone in charge of overseeing the content for *any* digital signage system you have. Also, every digital signage system will have some level of maintenance associated with it – you must consider this, too.

1. WHAT DO YOU WANT TO SHOW ON YOUR DISPLAY?

The most common sorts of content include:

- A slide show of photographs and graphics
- A video or a list of videos
 - From YouTube
 - From videos you have on your PC
- A dynamic/live web page
- News
- Information relevant to the folks who may be near the display
- Weather
- Custom-built content that cannot easily be put in any of the above categories, for example:
 - The ABRI Credit Union signage, behind the tellers
 - The digital menus at fast-food restaurant
 - The digital displays of arrivals and departures at an airport

2. HOW OFTEN DO YOU WANT TO CHANGE THE CONTENT SHOWING ON YOUR DISPLAY?

The most common choices for the answer to this question are:

- Almost never
- On a fixed schedule
- On demand

3. WHAT KIND OF RELIABILITY IS REQUIRED?

There are (more or less) two choices here:

1. You are willing to get it up and running and fix it if things get messed up, e.g., after a power cycle
2. You need the system to be up and running 24x7x365

4. HOW MUCH CAN YOU SPEND?

That is just a number. But some systems have a continuing cost for licenses. Even non-licensed systems will require that components be replaced when they wear out – current-day televisions can only be expected to remain viable for about 10 years.

POSSIBLE DISPLAY SYSTEMS

New Digital Signage systems are hitting the market every day. They range from super simple to super complicated, as you might guess.

COMMERCIAL ALTERNATIVES

Here is an overview of the Digital Signage systems you can buy.

SMART TV

Almost every new TV has a USB port. From there, you can plug in a USB Thumb Drive and show a slideshow of the photographs on that Thumb Drive. Also, most smart TVs also have a built-in web browser, so you can show your web page, too.

The problem with using a smart TV as a digital signage display is when there is a glitch in the system. For example, a power glitch will shut it down. And if there is some other sort of glitch, chances are you will have to go in there by hand and fix it.

But you cannot beat the simplicity! For many users, this is all they will need.

LOW-END DIGITAL SIGNAGE SYSTEMS

The market for these low-end systems is vast. A Google search for “digital signage system” in early 2019 produced dozens of options, including:

- **SmartSign2go** Digital Signage Google Chromebox Media Player with Easy-to-Use Cloud-Based Software (Includes 2-Week Free Software Trial) \$199, plus \$20/month licensing
- **XOGO** Mini 4k | Digital Signage Media Player | with Free Cloud Based content management system (CMS) Software - \$299
- **Screen.Cloud** - \$20/month for the software
- **TruDigital.com** - \$199 for the player plus up to \$49/month licensing
- **BrightSign** – Sells players with pre-loaded, license-free software, \$299 and up.
 - AD/Operations Department has several of these systems in use

Some of these are taken from the nice list at <https://www.capterra.com/digital-signage-software/>.

The features of these systems vary tremendously.

HIGH-END DIGITAL SIGNAGE SYSTEMS

There are several big players in this market. Fermilab has chosen Omnivex/Moxie. This is an excellent choice. There are no limits to what one can do with this system.

The most prominent implementation at Fermilab is the large TV wall on the east side of the Wilson Hall entrance at the Atrium level.

A Moxie system is powerful, expensive, and complicated.

HOME-GROWN SYSTEM: DYNAMIC DISPLAYS

Fermilab offers a custom-built and maintained system called the Dynamic Display system. This was created in response to the relative complexity of the high-end commercial systems available in the early 2010's.

The distinguishing features of Dynamic Displays are

- Anyone can change the content on a display at any time. This is used extensively in the two Remote Operations Centers in the Atrium of Wilson Hall
- There are no licensing fees – the only cost is for the hardware.
- All content is web pages – many people at the lab know how to create web pages.

WHAT IS THE CONTENT?

For every digital signage system, the most difficult part is creating relevant, interesting and new content. *Every digital signage system is weak because of this.* In the opinion of the author, at least one person must be assigned to think about, and potentially change, the content on a regular basis.

A good example of this is the “Neutrino Display” in the ROC-West (the one facing the Atrium). There is a team that meets from time to time to discuss how to change the content. Moreover, they add new information to this display's content almost every week.

SUMMARIES

Here is a summary table of the costs, the strengths, and the weaknesses of the available systems.

System	Vendor	Computer Cost	TV Cost	Licensing Costs	Strengths	Weaknesses
Smart TV	Samsung, LG, etc.	None	\$400 and up	None	Super simple	Not robust; requires manual intervention to keep it running. No control over the content. Showing web pages is not always perfect.
Low-end signage systems	Brightsign, etc	\$100 and up	Commodity TV: \$400 and up	Some systems have none, some do.	Robust, reasonably simple. Display can span multiple TVs on some systems. Content is stored locally in most systems.	Small learning curve for creating content. Changing content on the fly is difficult. Showing web pages is not always perfect.

High-end signage systems	Moxie, etc	\$1000 and up	Signage monitor, \$1000, recommended. But commodity TVs can be used	Generally, high	Extremely robust. Content is limited only by skill and imagination. Showing content on a schedule is easy. Touch-screen displays are supported. Display can span multiple monitors. Centrally-managed content.	Steep learning curve for creating content. Realistically, requires someone, at least half time, dedicated to the maintenance of the system. Changing content on the fly is difficult.
Fermilab Digital Signage	Fermilab	Any PC can work	Any commodity TV can work: \$400 and up	None	Very robust. Any web page that does not require user input can be shown. Changing the content on the fly is simple. Centrally-managed content.	No schedules. Single-monitor display only. Not every feature seen in Moxie can be reproduced here, for example, a “crawl” is not supported.

Note that all these systems, if they rely on web page, are subject to fluctuations in that content. If the owner of the display system controls the content, then you are OK.

Here is a summary table of the main features.

System	PC or Player	Can use commodity TV?	What is the licensing fee?	How is the recovery from a power cycle?	Can have multiple monitors for one display?	Schedules?	Can make on the fly changes?	Content creation skill level	Support Required
Smart TV	<i>Neither</i>	Yes	\$0	None	No	No	No	Low	Low, but you do it yourself
Low-end signage systems	Player	Yes	\$0 and up	Good	Yes	Yes	No	Medium	Medium, but you do it yourself
High-end signage systems	Player	Yes, but display monitors are recommended	Generally, \$1000+	Good	Yes	Yes	With the right add-on hardware: Yes	High	High, but there is a group in Computing that supports Moxie
Fermilab Dynamic Displays	PC	Yes	\$0	Good	No	No, but ...	Yes	Web page creation	Medium, but there is a support person for the lab.

The “Schedules” column refers to the ability to set a rigid schedule and have the content changed on that schedule. For example, “At 10:00 AM, show content 1. Then at 12:01 PM, show content 2. On Sunday, show content 3.” Etc. The “No, but ...” for Dynamic Displays means that a list of content can be shown, but it is not synchronized with a clock – it plays asynchronous to the time.

And here is a table of the answers to the four questions, above.

System	What do you want to show	How often do you want to change the content?	What kind of reliability is required?	How much can you spend?
Commodity TV	Photos or web pages	Rarely	Not important	Not much
Low-end signage	Web pages and almost anything else	Rarely or on a schedule	Very important	A little
Moxie	Anything you can imagine	Rarely or on a schedule	Very important	A lot
Dynamic Displays	Web pages, videos and photos	Rarely or on demand	Very important	Not much