Implementing Digital Signage

A Whitepaper by Worldlink Integration Group

Benefits and Uses for Various Industries

Digital signage is a great tool for any customer-facing business, larger office spaces, and even manufacturing plants.

With customer-centric industries like retail, food & beverage, grocery, travel, healthcare, and real estate, digital signage has many practical uses. The return on investment for the technology is typically well worth the initial cost, as profits from displayed advertisements, increased sales, and decreased cost in printing quickly add up. Updating menu displays, limited time offers, and new product promotions becomes less of a hassle and can be done in real-time. Customers may also interact with digital signs that are touchscreen-enabled, or with NFC or BLE connections to their mobile devices. This allows for loyalty check-ins, receipt of discounts, and way-finding or in-store product location. Digital signage can go even farther in clothing or apparel stores by serving as smart mirrors and points of purchase. The possibilities are endless for customer-centric companies who want to utilize this modern technology.

As for enterprises, manufacturers, and distributors, digital signs can be used for data display, urgent updates, meeting room scheduling, way-finding, safety reminders, and employee recognition. Office buildings, especially larger corporate spaces, can use these displays to notify employees of changes to meeting times and locations, or for company-wide messages from the executive team. Sharing relevant data and time-sensitive goals with the entire team can create employee awareness that allows for greater productivity and efficiency. This is especially important for cross-functional employees and upper management. Additionally, morale can be boosted with the display of work anniversaries, birthdays, recognition of outstanding employees, and appreciation for meeting or exceeding company-wide objectives.

When it comes to the use of digital signage in manufacturing plants or distribution warehouses, the technology can be used to display safety alerts, productivity standards, daily goals, urgent updates, schedules, team or individual recognition of superior output, and any other time-sensitive information. This creates a reduction in employee uncertainty through greater communication and can increase the overall productivity of the supply chain team.

Whichever industry you may be in, there is sure to be a beneficial use for digital signage from increased profits to better communication and everything in-between. Implementing the technology is a matter of purpose and timing. Will you need a touchscreen display for customer or employee interaction? What type of hardware, connectivity, and software will be necessary for your planned use? Is a small display enough, or would a digital wall be more relevant for your business? How/when will the displays be installed, maintained, and updated? These are just some of the many questions any company should consider before investing in a digital signage system.

Considerations

1. Hardware
    - Digital Signs vs. Digital Walls
    - Display and Mounts
    - Central Processing Unit (CPU)
    - Media Players and Audio

2. Software, Connectivity, Storage

2. Software, Connectivity, Storage
        Software for Content management, Distribution, and Scheduling
        Server and Application Software
        Wired or Wireless Connectivity
        Direct or External Data Storage
3. Interactive Capabilities
        Touchscreen
        Mobile Connection (BLE, NFC)
        Motion Sensing/Detection
4. Installation, Maintenance, Updates
        In-house vs. Outsourced
        Integration with Current Systems
        Updating Hardware and Software

1. Hardware

Before installing digital displays at any facility, one must decide the parameters for screen size and resolution, requirements for mounting the signage, the capabilities of a CPU based on your intended usage, media player requirements, and the inclusion of audio.

If your content will be solely static, the requirements of your display will be slightly less complex than that of a digital signage system that will be used for video, audio, or interactive content. The processing speeds of a CPU will not need to be as high and the need for touchscreen or motion-detecting integration will not likely be needed. Whatever the purpose of your signage may be, the central processing unit must have enough power to run the operating system and software. Of course, it is also important to keep in mind the potential need to upgrade the CPU as new needs arise.

Media players come embedded in some displays, so it will be important for you to decide whether or not the player is separate. "At its core, a media player is a device that is connected to an IP (computer) network, that receives data from a digital signage software's server component, and processes that data into a video signal that can be shown by a display device," making it a necessity for any digital display regardless of intended content.[1] When choosing a media player, consider the size of the device, how it will connect to the display, and mounting needs. In addition to various sizes of media players, there is also the decision between PC-based units and appliance-based units. Appliance-based media players use either custom software, Android's operating system, or are display embedded. The most important things to consider when choosing a media player unit is to have a clear understanding of what content your display will show and the type of software that will be used.

If your content has need for audio, there are several options to choose from. Screens can come with embedded speakers, can connect to your in-store speakers or intercom system via wireless or direct connection, or audio can be transmitted to the mobile devices of the target audience. Embedded speakers are useful for businesses or signage that plays content that is specific to a certain section or product in the store. Broadcasting the audio for this content through an entire building could be confusing and may be interrupted in industries where frequent announcements are made over the entire speaker system. Using store intercom or speakers are a great choice if you have one piece of content playing on multiple screens, only have need for a single display, or have installed a large display or digital wall that dominates the

---

[1] Brawn Consulting's PowerPoint Presentation: *Sorting Out Media Players For Digital Signage*

WORLDLINK
INTEGRATION GROUP

space. If sound is not necessary to make the content effective, but provides additional information or a superior experience for those who are actively engaged with the content of the signage, then opt-in mobile audio is an effective solution. Those who wish to hear the sound that accompanies the display can connect through BLE, NFC, or Wi-Fi, while those who are uninterested will not be required to hear the content of digital displays.

As for display quality, management must weigh the pros and cons of LED, LCD, or plasma, and HD versus Ultra HD or 4K with or without 3-D screens. High-definition is the standard, but as Ultra HD and 4K technology become more available and cost effective, store owners might consider installing signage that is capable of the superior quality. LED, LCD, and plasma screens are all capable of displaying high-definition formats and come in sleek, thin designs, but the cost is a major factor in the decision-making process between the three types. LED has greater energy efficiency, but comes at a higher cost, while plasma screens are generally cheaper, but are often thicker and require more power.[2] There is also the possibility to incorporate glasses-free 3-D images, but decision-makers should keep in mind the purpose of their displays, the audience, and whether or not the content would benefit from three dimensional capabilities.

The decision between individually mounted screens versus connected signage that makes up a display wall can also come into play. In smaller spaces and business offices, the likelihood of needing an entire video wall is slim. For larger stores in densely populated areas with content better-suited for large displays, an interconnected system of signage covering a large wall, ceiling, or even floor may be a necessity to truly engage the intended audience. This will require more robust processing units, media players, and wall mounts, so it is not a decision that should be made lightly.

If choosing to install individual displays, there is also the consideration of where and how the display will be mounted. The display mount you choose will be based on your building's infrastructure, where you want the digital sign displayed, and the probability that the sign will need to be moved in the future. Pull-out and swivel wall mounts allows technicians easy access to the displays' internal systems should a problem arise and allows adjustments to be made for easier viewing from different angles. For signs that will need to be moved, especially on a regular basis, a floor stand or temporary mount may suit your needs. Whether you choose wall, ceiling, cart or bolt down mounts, make sure the material is durable, meets the requirements for size and weight of your displays, and is best-suited for the intended purpose of your digital signage technology.

2. Software, Connectivity, and Storage

Once hardware decisions have been made, you will need to decide on the software that best fits your content creation and display needs, as well as whether the connection to media players, central processing units, and other back-of-house systems will be done wirelessly or through a direct connection. Also, consider if the data will be stored on a hard drive, external thumb drive, or cloud platform and who will have access to the information.

Software platforms are required to manage the entire system from the front-of-house display to the back-of-house hardware. Different hardware components will require certain application and server software to run effectively and integrate with the current software and hardware used by your business. For instance, touch screen technology will require different

---

[2] http://www.digitalsignage.com/html/lcd_vs_led_vs_plasma.html

applications to operate than a screen without interactive capabilities and features such as audio or motion detection require their own platforms as well.

There are also applications used for content management. These systems can be set up to schedule the times at which content will be displayed and distribute different information to different signs based on the relevance to a particular display. Of course, as with every aspect of the digital signage implementation process, your decisions will be based on the planned use of your system and may change over time. It is important to have a digital signage content strategy in play before installing your setup, as static displays will require different content creation platforms than signage displaying dynamic content. Of course, you will also want to assure that any software will integrate with current systems and will not overwhelm the central processing unit.

Getting news, videos, audio, and any other digital content from the creation platform to the display requires media players to be embedded, connected directly with cabling, or linked wirelessly (Bluetooth, NFC, the Cloud, and Wi-Fi). If connected directly, the data will often be stored on the display's CPU or on external drive. Wireless connection allows the data to be stored on an external drive, mobile device, or cloud platform. Deciding what storage and connectivity solutions are best for your system depends on your company's current networking system and creating a seamless integration of the digital displays.

3. Interactive Capabilities

Touch screens, mobile interactions, and motion-sensing technology can help to boost the return on investment of digital signage by presenting an opportunity for customer engagement and a more personalized experience. Whether or not you decide to incorporate the technology into your display depends on the intended purpose of the signage.

If the purpose of a digital sign is simply to display static images or run promotional ads, touch screen integration is an added feature that will go unused. However, if the displays have various menus to scroll through, product information, ordering capabilities, games, or other interactive content, a touch screen display is ideal. The same goes for mobile connectivity and motion sensing, which allows customers to engage with your display's content. Mobile connectivity and motion-sensors can also be beneficial for less interactive content.

Customers can use their mobile phones to scan QR codes on the display or connect to the signage via Bluetooth, Wi-Fi, or NFC for store and product information. They can even opt-in for notifications or send personal testimonials or pictures to the platform, which management can choose to display to increase personalization and loyalty. Employees in business offices can send updates on their work, capture relevant data from the signs onto their mobile devices, or even clock in –or out –for the day by syncing their phones to the digital signs.

Motion sensors and cameras can be used to boost the efficiency of digital signs, by only playing content or displaying images when the sensor detects a person approaching –or walking by –the sign. These sensors can also be used to detect the movement of a customer who can control the content or menus without actually touching the screen, which may prevent screens from becoming smudged with fingerprints or potential damage. The sensing capabilities can also be used for playing games, taking pictures, and a variety of engaging activities.

Installation, Maintenance, and Updates

Installation of digital signage requires setting up wall mounts, connecting to your current network, uploading software, system tests, and a plethora of other minor details that can be done

by an in-house technical team or an outsourced partner. Once the installation process is complete and the system has been setup to run the desired programs with your specified settings, it must be maintained and updated on a regular basis.

Maintenance of the hardware and/or software can be outsourced or handled by your own personal team of technicians, but it must be continually monitored. While there is software that can monitor the systems to alert for system failures, there is a need for knowledgeable technicians who can respond to the problem in a timely fashion. Keeping the system running efficiently requires continual work on everything from cleaning the screens to more complex processes such as replacing system components.

Of course, the software and hardware components may need to be updated which can require the installation of new screens, network integration changes, and software development or upgrades that may or may not require the removal of old applications. Making these changes may be within your IT team's skillset, but it can also be costly to maintain a staff that can handle the workload.

Final Thoughts

Static, printed signs are going the way of the dinosaur and digital signage with interactive, dynamic content is quickly filling the void in practically every industry. With so many hardware decisions and software options, managerial teams need to get strategic in their implementation planning to incur the greatest return on investment. The most important factor in deploying the technology is to nail down an intended purpose for the displays so that the technology compliments your goals without missing or unnecessary features. Of course, it is also important to factor in the potential for growth and additional usage in the future, but the initial implementation phase must be well thought-out. Digital signage is rapidly evolving and it is crucial that your systems are chosen, installed, and monitored by knowledgeable, efficient individuals.

For more information and to find out how Worldlink Integration Group can help with your technology deployment needs, visit our website.

Or, find us on Twitter, Facebook, LinkedIn, and Google+ to stay up-to-date with news and future content.