

A Guide from Digital Signage Today

# Content and Content Management for Digital Signage



**INSIDE:** Content is the lifeblood of any digital signage network — and content management is its heart. Learn how to build and maintain a healthy, robust content management plan in this how-to guide.

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*Keywest Technology, a world leader in the design, manufacturing and marketing of interactive digital signage software and players, television information systems and narrowcast video equipment, is dedicated to the idea that digital technology should make communicating powerful ideas easy, effective and fast.*

*Founded in 1999 with professional television roots stretching back to 1979, Keywest Technology recognized early on that the transition from analog to digital media using Information Technology was helping to propel an unprecedented change in communications and that an entirely new group of communicators was emerging. This group wasn't engineering-oriented but rather communications-oriented.*

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# Introduction

**A**s editor of Digital Signage Today, I spend a lot of time talking with professionals in the industry. I've joked with several of them about implementing a "content is king" fund — a special savings account in my name, and they have to put a dollar in it every time they use the phrase "content is king." If I ever were to do such a thing, I'd be able to retire within a few months.

That humble little phrase has indeed become something of a cliché in the industry — it is our "location, location, location" — but for good reason. Digital signage professionals know — and they work diligently to educate their clients on this — that the best hardware and software the world has to offer will fail spectacularly if they are used to deliver weak, boring or poorly designed content.

**The best hardware and software the world has to offer will fail spectacularly if they are used to deliver weak, boring or poorly designed content.**

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Take a look at the liner notes of any classic jazz record that has been reissued on compact disc; you'll likely find a little disclaimer saying that the high-quality reproduction of the digital audio process will "reveal limitations in the source material." This holds true for digital signage, as well. Content mistakes

always look bad, but in high-definition, they look horrid.

There are two dynamics behind content that need to be understood and managed, and they must be managed in tandem with one another. First, there is the quality issue, the limitations in the source material and the need for better source material. We'll deal with that in chapters 2 and 3. Then there is the management issue — this quality material is going to start piling up, and you had better have an intelligent system in place for managing and delivering it when the time comes. Chapter 4 is devoted to "taming the content beast."

I will make you this promise: you will not find the phrase "content is king" anywhere else in this book. This is a cliché-free zone. But you will find a thorough examination of the forces at work behind that phrase, and why so many people are so emphatic about it.

I'd like to thank Keywest Technology, whose kind sponsorship of this guide allows us to provide it to you at no cost.



*James Bickers, editor  
Digital Signage Today*

# Chapter 1

## Why content means so much

Imagine you have been invited to a red-carpet night out at a new luxury cinema. The proprietor picks you up in a limousine (stocked with champagne, of course), delivers you to the theater, ushers you to a front-row seat (leather, and with more champagne on hand) and asks you to kindly enjoy the show. The curtains rise, and you are treated to a Pauly Shore movie.

Or perhaps you have just purchased a woefully expensive audiophile stereo system. You've paid out in the high quadruple-digits for the best speakers, receivers and tuners money can buy. You get it home, hook it up and discover that the only signal it is capable of receiving is talk radio — and only the belligerent, shrill talkers at that.

Those are both examples of ridiculous extremes, but the point is this: The delivery mechanism for any product, service or message must be subservient to what it is delivering.

Poor content begets poor customer experiences, which ripples outward — perhaps doing irreparable harm to a company or its brands.

“Who could fault visitors to a corporation for wondering about that organization if the digital sign in the lobby misspells their name?” asked David Little, director of marketing for Keywest Technology. “What would go through a driver’s mind if the digital sign in a car dealer’s repair

**“We tell our clients to pay much more attention to their content and creative process than the hardware and software. Once they turn the system on, if it’s ugly, it’s ugly big.”**

– Loren Bucklin, president of Connectedsign

center said ‘We are committed to quality’? The customer might logically conclude that they are not committed to quality, and shouldn’t be trusted to repair their car.”

The psychological effect on customers goes far beyond such obvious problems as typos and misspelled names. Poor contrast, outdated visuals and design themes, expired offers, or graphics that are displayed at a higher resolution than originally intended all place a subconscious impression in the viewer’s mind that the company in question does not pay attention to detail.

“Content is everything,” said Bill Collins, principal of research consultancy DecisionPoint Media Insights. “A store sells content — merchandise and services — and it sells a customer experience. So, the content of any store’s in-store digital media is fundamental to making the store experience friendly and helpful.”

“We tell our clients to pay much more attention to their content and creative process than the hardware and software,” said Loren Bucklin, president

## CHAPTER 1 Why content means so much

of Connectedsign. “Once they turn the system on, if it’s ugly, it’s ugly big.”

### The glass is more than half full

Too much time spent dwelling on poor content might give the impression that this is a bleak endeavor; but in fact, digital signage holds the promise of making content better than ever, brighter and more colorful and more emotionally engaging for everyone involved.

Much has been made of the “digital generation,” the young demographic that has grown up with a cell phone in one hand and a video iPod in the other. And while the impact of that group and its buying habits is indisputable, the effect

is more widespread. A report from the Leichtman Research Group found that there are about 26 million high-definition television sets currently in American homes, and that number is expected to soar to 65 million by 2010.

That’s a lot of people who have become attenuated to high-quality, high-definition content. And once you have gotten used to that level of visual panache, any return to the visuals of just a few years ago feels like a disappointment.

For businesses, this is a golden opportunity; the consumer trend toward acceptance of high-definition visual content is coinciding with the increased availability and lower prices of digital signage



*The quality of the content on an in-store signage network is an extension of the products on the shelves — and every bit as much care should go into the preparation of that content as goes into the merchandising of the products themselves.*

## CHAPTER 1 Why content means so much

technology, making it possible to give customers that “wow” experience that they’re used to, in places they are not used to seeing it — retail shops, restaurants, banks, or entertainment venues.

“Engaging shoppers who are in the buying mood at the point of purchase is the new frontier for marketers,” said Little. “About 70 percent of consumers who walk into a store have not been convinced by advertising on what product or brand to buy. Digital signage must engage customers with relevancy and enhance experience, or it will be tuned out and ignored by the capricious consumer.”

As for the actual substance of that content, the biggest determinant is purpose — what effect do you want it to have on viewers? Do you want to capture their attention, in order to attempt to influence their behavior? Do you want to deliver product or brand information? Do you want to deliver messages that will provide a positive emotional and psychological experience for the customer?

“Digital signage offers the opportunity to provide content that is dynamic, exciting and engaging, giving people a reason to stop long enough to take in the message, but content is the key driver,” said Anthony Uhrick, vice president of sales



*Today’s consumers are used to seeing digital content — in fact, many of them seek it out. This makes the quality and relevance of digital signage content more important than ever.*

and marketing for NextWindow. “The use of re-purposed Web sites needs to stop; digital signage is a different venue with different requirements.”

“Every organization believes their brand is unique,” said Richard Fassio, founder and president of creative content agency Modern Digital. “It only follows that content strategy for each organization should also be unique. Brands enable business to connect with the consumer, benefit from consumer consent and thereby increase consumer spending. Running canned content on an in-store network will not accomplish this.”

It is not enough for content to be visually impressive, though; it must also be relevant to the customer and delivered at a relevant time. A customer in an auto

repair shop's waiting room is probably not going to be terribly receptive to grocery ads; specific calls to action won't have as much punch if they're delivered away from the place making the call (for instance, advertising a limited-time sale on a network of screens far removed from the retailer offering the promotion).

"A huge strength of a digital signage network over printed media or broadcast television is not necessarily technical, but psychological," said Little.

"In our schedule-driven culture, time is becoming the new currency for marketers, and using consumers' time wisely may mean winning a new customer. On the other hand, if you waste people's time with what is perceived as either unneeded or unwanted information, you may lose their participation in mentally processing information that engages the sales process. This relevancy factor will make or break any digital signage system, regardless of what the objectives are."

Ultimately, quality content is about a confluence of technical and psychological factors. It must deliver the appropriate information to the appropriate audience at the appropriate time, and it must give the customer something that they perceive to be beneficial.

People like to buy things, and people like to make decisions — but by and large, people do not like to feel that

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they are being "sold to." Quality content, then, encourages the sale by creating a relationship.

"You must first get their attention. After you get their attention, you must give them something that is perceived as beneficial," Little said. "If you give them something beneficial, you have satisfied a need or created a want and satisfied it. This forms a unique relationship ... and once they receive the benefit, they typically will come back for more."



## CAPTURE OF ATTENTION

The appearance of motion can capture one's attention. Surprisingly, recent research (Franconeri, Hollingworth and Simons, 2005) has suggested that the appearance of a new object is not sufficient to capture attention. Other work (e.g. Nakayama & Mackeben, 1989; Kristjansson, Mackeben & Nakayama, 2001) shows that flashing/flickering images are not successful at capturing attention for extended periods – and that such flicker can be filtered out relatively easily. Dozens of other studies have revealed other aspect of attentional capture.

Attention can be captured by:

- Motion onset
- Luminance/brightness changes
- Color changes (only if dramatic)
- Faces – particularly emotional, famous or relevant ones
- Unique things (e.g., a red thing on a field of green things)
- “Task-relevant” items (e.g. if looking for a teapot, silver items will capture attention)
- “Resonant” items (emotionally, task-wise, etc.)

When creating content for digital signage networks, one should first decide whether or not he wishes to capture attention. In some cases, when creating ambiance, for example, it might be desirable to remain “un-attended.” If attentional capture is desired, the specific goal of that capture should also be considered. For example, if the goal is to warn the viewers, then any “trick” might suffice to capture attention.

However, if the goal is to perform a gentle soft-sell (or provide a reminder), then a subtle attentional capture might be more appropriate. Of course, the overall artistic/creative nature of the content must also constrain or indeed develop from the choice of technique.

*(Excerpted from “Digital Signage Networks: Theory, Psychology and Strategy” by Pixel Inspiration Ltd., reprinted with kind permission.)*

# Chapter 2 The technology impact of digital signage content

In most cases, digital signage represents a move from a static method of communication to a dynamic one — in other words, screens are most often being used to replace paper of one sort or another.

This is both a blessing and a curse. It is positive largely because it means there is little jockeying for real estate; that space on the wall that once held posters can now hold a screen of comparable size. But it also creates difficulty because the content that needs to be sent to those bits of real estate could not be more different.

Print media is not dynamic; it is a “high-involvement media,” meaning that it has

## Dynamic signage touches the consumer mind on an entirely different level than print media.

a harder time being noticed, and once it is noticed it is easier to ignore on future viewings — unless there is something personally compelling about a given piece of print material, for instance, a second or third viewing might go unnoticed because the viewer subconsciously knows that he has already seen it and there is no reason to look again.

Dynamic signage, on the other hand, touches the consumer mind on an entirely different level. Even if you are not talking about moving images and dynamic content — even if you are talking about the simplest of digital signage systems, such as a bookstore screen that cycles through the latest magazine covers one at a time, you still have moved to a system that encourages the viewer to look, then look again, then check back again later. Add to this the possibility of content that is itself dynamic and moving and perhaps even interactive, and you have a very compelling reason for people to see your messages.

“Engaging people on their terms is one of the hallmarks of marketing in the 21st century,” said David Little, director of marketing for Keywest Technology. “The media technology of the information age

### PLANNING DIGITAL SIGNAGE CONTENT

#### Five must-do steps

1. Define your message
2. Define your audience
3. Define the location
4. Define your performance criteria
5. Research the platform; settle on the software before planning the network, hardware or staffing

— Jeff Collard, president,  
Omnivex Corporation

has given people much more control over their individual pursuit of physiological or psychological fulfillment.”

To a large extent, content is driven by both hardware and software availability. But the breakneck pace of advancement in digital technology has made it possible to do much more than ever before, using basic tools that businesses already rely on.

Chief among these is Internet connectivity. The first iteration of digital signage relied largely on videotapes or DVDs, manually shipped to each location and updated by “sneakernet.” This was the best that could be done at the time — and Wal-Mart TV has always been an example of how to thrive even with such a rigid structural limitation — but the emergence of IP as a de facto commu-

nication standard has made it possible, if not simple, to deliver rich content inexpensively to any number of remote locations.

“Manual or ‘sneakernet’ solutions could be viewed as the least expensive, but they bring hidden costs and more difficult deployment and support issues,” said Wayne Ruttle, vice president of sales for ADFLOW Networks. “Internet-based content delivery solutions take advantage of low cost access, easily available and stable bandwidth and guaranteed up-time of the display screens.”

### Interactivity — pulling the viewer into the communication process

Although it is still an emerging facet of a technology that is still embryonic itself, interactive digital signage could be one of the most important advances to reach businesses in some time. A hybrid of digital signage and interactive kiosk functionality, interactive signage might hold more potential for companies than just the sum of its two parts.

Interactive digital signage can capture the attention of consumers by playing compelling content, and then asking them to get involved.

The external trigger might be a touch of a touchscreen, a code entered into a cell phone or simply some sort of environmental condition (stepping on a pressure-sensitive mat, for instance).



*A sophisticated digital signage platform will allow content from external sources to be automatically “fed in” to pre-defined zones — making updates a zero-effort process.*

## CHAPTER 2 The technology impact of digital signage content

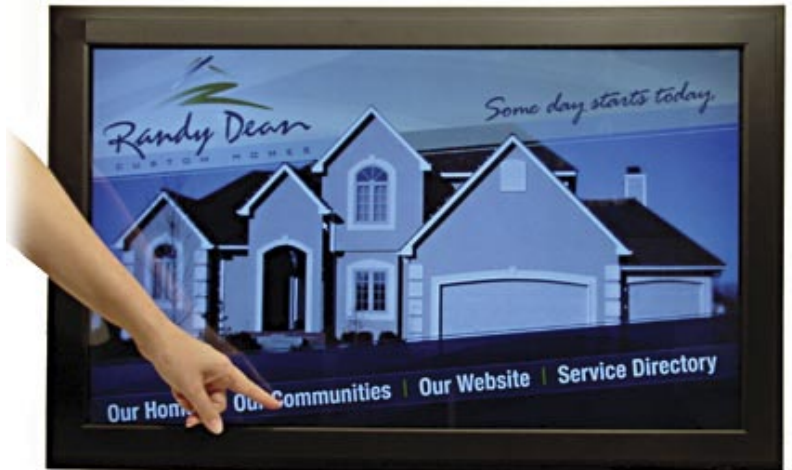
The viewer then becomes in control of the experience — and consumers who feel they are in control are more receptive to the messages they receive.

For instance, a shopper standing at a hybrid interactive sign at an auto dealer might retrieve pricing and availability information on motor oil. The system then sends the inquiry to the store's server and returns a list of recommended products (not just the oil but the matching filter). If the retailer uses a customer loyalty system, the device could uniquely identify the customer's car and determine which services are due or overdue. The whole experience would wrap up with final purchase recommendations from the system, countered with an order release from the customer.

"This alone is a great strategy, but with interactive digital signage, we also have the unique ability to engage shoppers based on their needs or wants," Little said. "What enticed the shopper to touch the screen in the first place?"

Perhaps it was a video of a certain NASCAR driver, talking about the importance of regular oil changes. Maybe it was an ad for a pickup truck featuring a popular country singer. Maybe it was an educational feature on synthetic lubricants and how they might cost more in the short term but pay for themselves within a certain period of time.

On an interactive digital signage system,



*Interactive digital signage can capture the attention of consumers by playing compelling content, and then asking them to get involved.*

messages like these can be planned, scheduled, dayparted and targeted.

"Taking things one step further, this data could also be used to attract more advertisers," said Anthony Uhrick, vice president of sales and marketing for NextWindow. "If it could be demonstrated that a specific location, at a specific time of day, draws the greatest number of targeted viewers, would a marketer pay more to be displayed? Would they consider bidding for the right to be displayed?"

Uhrick added that advertising space on such a signage network could work in a fashion similar to online contextual advertising, using a pay-for-performance model based on actual value delivered.

"Interactive digital signage can address multiple, even complex strategies that tie directly into a retailer's integrated

marketing communications scheme,” Little said. “These hybrid systems cast a wide net that is targeted, cycling through a deep playlist of content designed to sell products, cross-promote, upsell — the list goes on and on.”

### Integrating external media sources

One of the most powerful aspects of digital signage is the ability to set up parameters that specify how content will be aggregated, managed and then deployed. For instance, many networks split their screens into a variety of “zones” — the top right for current weather, for instance, the right-hand side for news headlines, perhaps a stock ticker crawling across the bottom.

A sophisticated digital signage platform will allow this content to be automatically “fed in” once those zones are defined — making updates a zero-effort process.

Companies such as DataCall Technologies, for instance, offer weather feeds that vary by ZIP Code. Once the feed is set up in the digital signage software, it automatically pulls the latest weather information from the server, localized to each screen, and places it in the proper zone. Similar products serve up news and stock prices.

Some of the sources that can provide auto-aggregated content for digital signage are:



*Intelligent digital signage software allows content to be managed — and played — based on factors such as time of day, day of week, and others. Content can be set to automatically “expire” after a certain date, as well.*

- Television
- HTML
- Streaming data
- Video over IP
- Audio
- Animations
- News
- Weather
- Local traffic
- Stock updates
- Sports scores
- Entertainment headlines
- RSS feeds

Not all digital signage networks require the use of zones and feeds; but if such a content strategy might be a possibility down the road, it is essential to choose

### UNIQUE FEATURES OF DIGITAL SIGNAGE NETWORKS

Place is known. Because the location of any display will be known, this information can be used to make the content more appropriate to the place. If a display is located near one particular product, the content on the display can be crafted strategically with this in mind. For example, the content could promote that product, promote its benefits, create an appropriate mind-set (ambiance, reminder) or promote a complimentary product or service available elsewhere. Another aspect of “place” that is quite relevant is the fact that often a display is near the point of purchase. A great deal of research has shown that advertisements near the point of purchase are far more effective. Although the size of this effect and the explanation for why it happens are both controversial, it is clear that point-of-purchase information has a massive impact on behavior.

Time is known. Because a digital signage network is controlled by a computer system, content is “served” as a function of time of day. For example, content aimed at business travelers might be shown at an airport on Monday mornings and family-aimed content might be shown Friday afternoons.

Events are known. Information related to the fusion of time and place can also be known. For example, current weather conditions can be known. The traffic flow can be known. The specifics of an event can be known (concert, sale, flight delay). Such information – and its use – is limited only by the creativity of the digital signage network designers.

Audience is known. Because time and place are known, audience demographic and psychographic information can be well specified. This allows for highly relevant “narrow-casting” that should speak directly to the audience at that moment.

Content is dynamic. Having dynamic, digital content has numerous advantages over other forms of advertising. Compared to print, the content creation/distribution process is more rapid and less costly. Also, the content can be customized and tailored “on the fly” to each display device separately. Finally, the medium allows for animation and, in the case of kiosks, interactive opportunities.

*(Excerpted from “Digital Signage Networks: Theory, Psychology and Strategy” by Pixel Inspiration Ltd., reprinted with kind permission.)*

# Chapter 3

## The aesthetic impact of digital signage content

**T**here is a concept among artists — writers, painters, musicians — that once they create something and offer it up to the world, it is no longer theirs. It now belongs to the people who are embracing it, using it, enjoying it.

In a sense, the same is true of digital signage. While at the drawing board, these screens are yours — all of the hardware planning and networking and software integration is in your hands.

But once you place the screens in your bank or retail environment or restaurant, they belong to your customers. Just as a customer comes to think of the neighborhood grocer as “his store,” so too will he view those screens as something that has been placed there for his edification and enjoyment.

Suddenly, aesthetics are very important. It is no longer enough for the screens to work — the content must be pleasing to consumers and must resonate with them in a way that is consistent with what they have come to expect from you.

### Four basic principles of aesthetics

Jim Collins, president of DSX Media,

points to four time-tested design principles that work for any place graphic design is used; they come from *The Non-Designer’s Design Book*, by Robin Williams.

1. Proximity. “Items relating to each other should be grouped close together,” Collins said. “When several items are in close proximity to each other, they become one visual unit rather than several separate units. This helps organize information and reduces clutter.”

2. Alignment. “Nothing should be placed on the page (or display) arbitrarily. Every element should have some visual connection with another element on the page. This creates a clean, sophisticated, fresh look.”

3. Repetition. “Repeat visual elements of the design throughout the piece (playlist). You can repeat color, shape, texture, spatial relationships, line thickness, sizes, etc. This helps develop the organization and strengthens the unity.”

4. Contrast. “The idea behind contrast is to avoid elements on the page (display) that are merely similar. If the elements (type, color, size, line thickness, shape,

**It is no longer enough for screens to work — the content must be pleasing to consumers and must resonate with them in a way that is consistent with what they have come to expect.**

## CHAPTER 3 The aesthetic impact of digital signage content

space, etc.) are not the same, then make them very different. Contrast is often the most important visual attraction on a page (display).”

### You say you want a resolution ...

Television broadcasting standards, of which resolutions are part, are government-mandated. Such mandates fit the medium because without them it would be terribly difficult for a consumer market to develop.

Digital signage image resolution is much more laissez-faire. No regulator mandates what it must be. Rather, the resolution that’s selected for a digital signage application is a function of factors such as the size of the display and number of pixels available as well as the average distance between the viewer and the sign.

For example, the pixel count of a digital signage display can exceed the pixel count of individual panels used to make up that display. Many large venues require the clustering of panels to form oversized displays, sometimes exceeding 16 feet by 9 feet in outside dimensions. The content shown on these “video walls” often requires greatly increasing the resolution to help offset the size and closer viewing distances that are attributed to digital sign applications, especially indoors. So, if quality is the end game, the content at the transmission end of the equation must be opti-



*Proximity of on-screen elements, alignment, repetition and contrast are the four pillars of a strong on-screen content design.*

mized for specific output devices. For digital signage, that likely means content must be managed in multiple resolutions, for different screen sizes, panel orientations or even clusters of panels.

“Screens usually can accommodate a set of different resolutions,” said Anke Gill, director of marketing for 1-2-1-VIEW Corp. “If the content system outputs in (a size that is) smaller than the screen resolution, usually the electronics in the screen will interpolate and fill up the screen. However, using third-party video scalers between the output device and the screen is not unheard of.”

Scaling up, though, is seldom a good idea. Pixelation occurs when content is made larger than it was originally rendered; this can make content unattractive and unprofessional at best, down-



## CHAPTER 3 The aesthetic impact of digital signage content

right illegible at worst. For any signage system, a goal should be to create all content at least as large as the biggest screen in the network.

Scaling content down, however, is perfectly acceptable; most digital signage software platforms can seamlessly reduce the size of video and images with no discernable loss in quality. If bandwidth is an issue — and it often is, when dealing with large video files — the scaling needs to be done on the server side, so that bandwidth isn't wasted sending data to the screen that it will not be able to use.

In addition to resolution, pay attention to the aspect ratio of content. This refers to the width of the displayed imagery, divided by the height. For most standard

screens, that ratio is 4-to-3; for wide-screens, it is 16-to-9.

Those are very different shapes, and if the decision is made to create content once and scale as needed, the result will be imagery that is either stretched or pinched — in either case, very unattractive. (If you've watched non-widescreen, analog content on a widescreen TV, you've seen this effect.) This calls for yet another set of content, divided by aspect ratio.

For businesses in the content planning stage, it is helpful to make a matrix of resolutions and aspect ratios, and fill in that matrix with the specifics of what content is needed. Here's an example of what that matrix might look like, once filled in:

	4:3 ratio	16:9 ratio
<b>15-inch</b>	Product info spots Loyalty sign-up ad	Product info spots
<b>21-inch</b>	Credit card offer “We’re hiring” spot	Loyalty sign-up ad Gift card reminder
<b>42-inch portrait</b>	“What’s new this week” ad	Wayfinding content
<b>42-inch landscape</b>	Product info spots Repurposed TV ads Gift card reminder Third-party ad slot	Credit card offer Upcoming events “Tell a friend” promotion Third-party ad slot
<b>60-inch portrait</b>	“What’s new this week ad	Wayfinding content
<b>60-inch landscape</b>	Product info spots	Credit card offer

## SELECTING THE ORIENTATION

In many digital signage applications, portrait mode (positioning the screen vertically) seems to convey more interest and catch more attention than landscape (horizontal) mode. Is this really the case ... and if so, why?

James Mock, president, 360 Ideas: “In a retail setting, the portrait mode may be aesthetically more appealing and usually blends better with the merchandising needs of the store. Conversely, patrons in a hotel stepping out of an elevator may be better served with the larger view and greater accessibility using landscape mode, especially important for touchscreen applications. Landscape gives patrons more space to interact with the sign at eye level and can create interest when presented with graphics that take advantage of the added breadth.”

Wayne Ruttle, vice president of sales, ADFLOW Networks: “It is our experience that portrait mode screens are a bit of a short-term anomaly driven by trying to emulate a static poster layout. In some applications, portrait is the only way to fit a store look and content strategy, and only recently have some manufacturers designed screens to operate in portrait-mode and still hold their warranty.”

Tony Turiello, group manager, Panasonic System Solutions Company: “I think portrait mode is more conducive to the retail environment in general. Most static signage and posters in malls, movie theaters, restaurants and airports, are presented in this format and since digital signage is meant to supplant these media, it makes sense to mimic this presentation. However, when it comes to high-definition and wide-screen video content, portrait-mode requires some additional consideration. To display this type of content in portrait-mode, it is necessary to either crop the image or create smaller display window layouts to fit the entire widescreen image.”

Loren Bucklin, vice president, Connectedsign: “The orientation decision should reflect the type of content most often presented. For example, cars are landscape-friendly, while people are portrait-friendly because of the forms.”

Jeff Collard, president, Omnivex Corporation: “Orientation depends on several factors, like location or content. In some cases, there will be technical or mechanical restrictions that force one orientation over the other. Don’t assume that one orientation is always better than the other. It is not uncommon to have a mix of orientations and sizes within a single store in order to effectively deliver the right message at each point.”

### Break it up! Thoughts and best practices on segmenting screen content

Opinions are sharply divided on whether it is a good idea to divide the screen real estate on a digital signage network. Of course, there are those networks whose entire business model is built on the segmented screen — for instance, captive audience networks such as those in elevators or airports that sell ad space around and alongside streaming media content like news and entertainment.

But aside from those very specific models, it is sometimes wise to segment screens into different “regions” or “zones,” each with a specific purpose. Doing so wisely requires more than a little restraint, as well as a concerted focus on what is in the best interest of the viewer.

Here are six “best practices” for dividing screen real estate:

**1. Go with the flow.** The screen as a whole should suggest a logical “flow” — that is, the viewer should intuitively be able to tell where they should look first, what they should look at next, etc. Generally, this is accomplished by making the content that is of greatest value to the viewer the largest. If a recipe is sharing screen time with an ad for a specific food product featured in that recipe, the recipe itself should get the majority of the screen space. Otherwise,

The screen as a whole should suggest a logical “flow” — that is, the viewer should intuitively be able to tell where they should look first, what they should look at next, etc.

the consumer will subconsciously register the entire screen as an ad, and is more likely to ignore it.

**2. Keep it consistent with your brand.** On-screen content should be consistent with all other messaging in the enterprise. This begins with simple things such as color schemes and fonts, and extends into more esoteric matters such as the size of design elements, relative positioning of type and images and visual styles. It doesn't matter whether your content is created in-house or by an external agency; in-store digital media needs to be added to the list of products managed by your creative team, and that same team should be involved in meetings to decide how to allocate screen space.

**3. Make smart use of contrast, color and size.** Human eyes will always land on the largest, brightest item in any given field — use this as a way to guide the viewer around the screen. If you are using scrolling text for ancillary messaging, don't make that text larger or brighter than the message that needs to get the primary focus. Minimize

the attention given to information that people will seek out when they need it, such as weather conditions or news updates. And again, use color schemes that reflect the rest of your branding — if your brochures and static signage have trained people to know that your headline text is in beige type on a light yellow background, use the same pairing on-screen to create a psychological connection with other messages.

**4. Understand motion and how it affects viewers.** If something is moving or changing, our eyes are naturally drawn to it. You can use this to your advantage, or you can allow it to become a liability. If animation or motion are going to be used, make sure they are most prominent in the area of the screen that deserves primary focus. Too much movement elsewhere on the screen will distract from the message, if not cause the viewer to give up in frustration and look away. And keep in mind that viewers hate unnecessary or gimmicky movement and effects — overly cute transitions, tickers that move too quickly and blinking text should all be avoided.

**5. Keep it simple — but only if it needs to be.** If you are trying to tell your viewers about the movements of the NASDAQ, updated every 10 minutes, you're going to presenting a visually sophisticated message, with lots of sidebars and graphs and scrolling numbers. If you're trying to tell your viewers how

to make delicious chicken skewers that the family will love in just a few minutes, the situation calls for a much simpler approach — perhaps just a single large window with a video demonstration. Understand the level of depth of your content, and plan a visual strategy accordingly.

**6. Eschew gratuitous information.**

It's a great time to be in the business of delivering content, because there is so much of it out there. Weather tickers? You bet. Sports scores, updated by-the-minute? Headline news? Latest blog posts on any given topic? Viral videos? User-generated content? It's all there for the taking, but just because you can put something on your screens does not mean you should. Take a step back from the entire endeavor, and remind yourself what it is you are trying to communicate. Phrase it in the simplest terms possible ("I'm trying to tell people about XYZ new product," "I'm trying to get people to go to the bank counter at the front of the store," "I'm trying to increase sales of house brands."). Now, what content do you truly need to convey that message?

**Give the people what they want: Building content strategy based on customer expectations**

Human beings enter into virtually everything they do with one or more expectations, and when those expectations are met, they feel happiness. When their expectations are not met, they feel any

## CHAPTER 3 The aesthetic impact of digital signage content

number of negative emotions — disappointment, betrayal, anger, frustration.

Imagine picking up a glass filled with iced tea and taking a drink — only to find out that it actually contains soda. The immediate visceral reaction is a negative one, as if the drink tastes bad.

It does not, in fact, taste bad — it's just not what you were expecting, and your subconscious threw an alert at you, saying "Something is wrong here." In fact, you like soda, and a moment later you take another sip, and this one tastes much better. The liquid did not change; your expectations did.

Customers entering your space will have expectations about the experience they think they are about to have; the same is

true of each individual aspect of the experience as a whole. If you serve coffee, it had better be good coffee; if you have shopping carts, the wheels had better not stick; if you hire "customer service representatives," they had better give good customer service.

When customers look at a digital sign in your place of business, they are likely expecting one of two things: information that is directly related to their relationship with you (marketing-driven messages, product promotions, etc.) and information that is not (weather, news, community events, etc.). Critical to the success of a digital signage network is delivering the information customers expect, when and where they expect it.

For instance, does a subway commuter



*Customers have expectations when they walk into your environment. Make sure your signage content is consistent with what they are expecting from you.*

looking at a screen want to see information about what is on sale at the nearby grocery store? Probably not, even though they might find that information valuable at a later time. They would more likely appreciate weather information, since they are about to step out into the world where weather will directly affect them.

“Customers walking in a shopping mall will not stop or even slow down to watch an advertorial,” said Anke Gill, director of marketing for 1-2-1VIEW Corporation. “These customers want quick and relevant information that can be digested in a short period of time. Customers sitting in a doctor’s waiting room or in a bank, however, expect something very different from digital signage — they want to be entertained so that their waiting time is perceived to be shortened. The content emphasis here should be on longer content segments with high entertainment value.”

“Shoppers want to be entertained and informed, not just advertised to,” said Tony Turiello, group manager for Panasonic System Solutions Company. “Don’t broadcast advertising for 40 or 50 minutes at a time — break it up with other non-advertising content. While the audience is captive, don’t penalize them for it — creatively engage them.”

**Some possible goals for marketing-driven messages include:**

- Improved customer experience — making the customer happy through entertainment clips, lifestyle messaging, or positive affirmation (“Thank you for your business!”)
- Product information — not just where things are, but creative use of video to demonstrate product value (recipes in a grocery store; tax-time tips in a bank; in an auto parts store, video on how to change your own oil)
- Special promotions — weekly sales, overstocks, upcoming events, “micro-sales” (“For the next 15 minutes, get 10% off XYZ!”)
- Ambiance — nebulous content that might not create a top-of-mind impression on viewers but instead aims to create a general feeling of well-being; to make the customer glad he is there

**Goals for information-driven messages include:**

- News content — headlines, weather, financial news, sports
- Community events
- Corporate communications — welcome messages in a lobby, cafeteria menus, upcoming building events
- Wayfinding
- Public relations messages

Most digital signage networks will benefit from a selection that draws from both lists, usually woven together (i.e., don't stack all of the sales information up next to one another; intersperse community information and ambiance between promotions to eliminate the subconscious notion that "this screen just shows ads").

"Consumers want to be engaged," said Richard Fassio, founder and president of creative content agency Modern Digital. "Engaging can encompass everything from entertainment to informational content. Every situation will have a different definition of what is engaging.

**"If you aim at nothing, you're going to hit nothing smack dab on the head. Defining what experience you want someone to have — this is the first step."**

— Richard Fassio, Modern Digital

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This is why it so important to define what the user experience will be in order to create a compelling media strategy. If you aim at nothing, you're going to hit nothing smack dab on the head. Defining what experience you want someone to have — this is the first step."

## MESSAGING IN ACTION

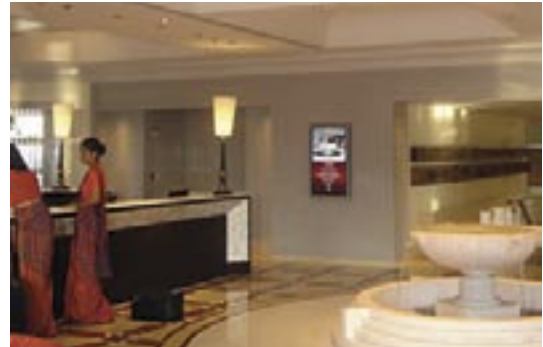
Digital signage isn't just about sales lift. Of course, lifting sales is nice, but that is most often accomplished by a careful mix of messages – some aimed at boosting sales, others aimed at improving customer experience, others aimed at building the company/customer relationship. Here are a few real-world examples of how companies are using their digital signage networks to connect with their customers.

➤ The recently opened Ritz Carlton in Tokyo uses 40 digital screens throughout the facility. One large group of screens is stationed near the conference area; it pulls information from the back office's event management system to give up-to-the-minute data on meeting times and locations. Of course, the Ritz could sell ad space on this network – but it chooses not to, because it draws value from providing information to visitors, and the positive psychological resonance that creates.

➤ A Marriott hotel in India also uses digital signs to tell visitors about events in its conference facility, but it segments the screen. Again, the hotel could use those newly partitioned zones to sell ad space, but instead it uses them to deliver messages about hotel amenities.

➤ The Copenhagen retailer Matas uses digital signs at end-caps, showing looping clips and images of promotional specials. Elsewhere in the store, the screens show third-party advertisements. At any given time, the company can change this strategy – switching the locations, for instance, or sending a mix of content to all screens regardless of location – with a few clicks from an administration screen. This level of control simply didn't exist with static, paper-based signage.

➤ The California supermarket chain Ralph's uses digital signage both at the point of decision (the aisles) and the point of purchase (the checkout). Many of the messages are used to direct traffic – drawing shoppers from less profitable areas into more profitable ones – while at other times they are used to offer special values and promotions. Digital signs at the cash register don't deliver product promotions or specials (because customers are not likely to lose their place in line to pick up another product shown) but instead focus on customer-service information and third-party advertisements.



*This Marriott hotel in India uses digital signage to communicate with visitors about events in the conference facilities.*



# Chapter 4 Taming the content beast

**F**or consumers, the dawn of digital music introduced a new challenge: keeping track of all those MP3 files that are suddenly filling up hard drives. Day-to-day computer users got a swift education in tagging, file attributes and naming conventions thanks to programs such as iTunes, which do most of the heavy lifting of organizing a music collection but only if handled properly.

Of course, these concepts have existed in the business world for years, but digital signage brings a whole new level of complexity to the game. Like that home computer that is suddenly bursting at the seams with music files, the server that runs a digital signage network will likewise become a haven for thousands of media files, all of which need to be stored and managed in an intelligent manner if they are to ever serve their purpose.

To understand how to handle all these media assets, it is helpful to first understand the software tool that will bring them together: the editor.

## An introduction to digital signage editing

The most basic concept of digital signage editing has to do with the development of playlists. A playlist is compiled using any media files that the editing software (the “editor”) can support. These files can be played sequentially, or they may overlap in whole or in part



*Digital signage content is made up of one or more data sets, coordinated and pulled together dynamically by software editing tools.*

by being played simultaneously in zones or layers.

Think of the playlist as the staff on a musical score. Each individual media clip or asset, in this analogy, is like a single note — perhaps not good for much on its own, but when combined with others, in the right sequence and at the right tempo, it can create a memorable experience.

The creative potential of playlist development is either limited or enhanced by the editor. The more types of media files an editor is capable of working with, the greater degree of creative flexibility. This is not limited to video formats such as MPEG and AVI; for digital signage editors, media files or clips include animations, graphics, text, graphic fonts (CG),

## CHAPTER 4 Taming the content beast

scrolls, rolls, crawls, and audio and data sources such as XML and HTML.

David Little, director of marketing for Keywest Technology, said most digital signage editors fall into one of two camps: Web-centric editors, which use online tools and prevailing Web-based philosophies of design and screen segmentation, and video-centric editors, which use concepts, techniques and tools that are familiar to the television community.

“Of course, there is overlap and other converging ideas, so it is sometimes hard to tell the difference,” he said.

“None of this should be a major shock since digital signage borrows heavily from both fields, and neither one is either right or wrong. What it does present is an array of overlapping options that the video or digital media producer must be keenly aware of as this is the ultimate factor in how the digital sign network will actually look.”

Regardless of which discipline the digital signage editor has been designed from, the network operator has full scheduling of media, error reporting, layout design tools and network connectivity. In addition,

both types of editing can use any kind of TCP/IP transport and network configuration, so there are areas of great similarity.

Little said the primary differences come into play when it comes to the actual execution of the playlist.

“The differences in how digital media is synthesized in the editor make for a different look or style,” he said. “This is a generalization, but Web-centric approaches more naturally and efficiently handle what is commonly called zones. Zones define how the real estate in digital signs is used. An extreme example of a zone-type look is Bloomberg TV. This



*Think of the playlist as the staff on a musical score. Each individual media clip or asset is like a single note – when combined with others, in the right sequence and at the right tempo, it can create a memorable experience.*

## CHAPTER 4 Taming the content beast

financial channel has about four to six working zones at any given moment. Yes, it is busy, but that fits the needs for those watching the channel. For marketers and retailers that are trying to achieve a multi-function communication strategy where external media is combined with internal marketing-driven messages, this might be a good approach. Of course, Web-based editors can execute single-zone media as well with great efficiency.”

Video-centric editors can create zones too, but generally require more production time to set up.

Little said the biggest advantage to a video-based design is its ability to create what is commonly called an “organic look.”

“Unlike the more segmented approach using Web-based tools, video-centric editors can enhance a playlist with the soft blending of organic shapes using a well-known video trick called layering,” he said. “Layering is also called compositing. This technique gives video-centric editors an advantage in creating warm, soft and inviting screens, which can morph seamlessly right before the patrons’ eyes into different kinds of presentations.”

### Managing your assets

Software that is used to manage a library of media assets is called



*Digital asset management (DAM) software allows for easy cataloging and indexing of large quantities of media files.*

digital asset management software, commonly referred to as DAM. Products such as Canto Cumulus, NetXposure ImagePortal and ADAM allow companies to build complex libraries, containing everything from videos to photography to PowerPoint presentations and Word documents.

Part of the value to DAM software is the level of control it gives to management. Security options prevent unauthorized users from placing assets in the library, which is very helpful when trying to keep branding material consistent and up-to-date. It also creates a workflow for the creation and approval of new media assets.

DAM tools also allow each asset to be tagged with one or more attributes; for

a digital signage network, for instance, graphics files might be tagged with all of the resolutions and screen orientations they are suitable for.

Interestingly, the latest version of Microsoft Windows — Windows Vista — has some enhanced tagging functions built in. For small endeavors that don't merit a full-blown DAM system, this file system level “meta-data” might be sufficient for asset management.

### Getting content ready to display

As mentioned earlier, proper media resolution and orientation are critical for the customer's sake. They're also crucial behind the scenes, as having media sorted and stored in a logical fashion will make it possible to deliver it properly.

Take another look at the chart in chapter 3. Each item in that chart will need its own media file. That means each instance of each item — so, the gift card reminder spot will need to be created and stored in three configurations — 21-inch widescreen, 42-inch non-widescreen and 60-inch non-widescreen.

A carefully chosen filename convention is a wise move at this stage; otherwise, new media files can become lost in a sea of similar-sounding names. In the current example, one option might be:

21\_wide\_giftcard.mpg  
42\_nonwide\_giftcard.mpg  
60\_nonwide\_giftcard.mpg

**Proper media resolution and orientation are critical for the customer's sake. They're also crucial behind the scenes, as having media sorted and stored in a logical fashion will make it possible to deliver it properly.**

It doesn't matter so much what system you come up with; it mainly matters that you come up with an agreed-upon system and stick with it, across all areas of the enterprise. It is particularly important to work with the design team (whether internal or external) on the naming convention.

It is also important at this stage to develop a strategy for performing updates. Assign one or more team members to perform periodic “audits” of the media library; this person should check for expired content, remove incorrect information, and generally ensure that everything is moving according to plan.

“Marketing campaigns will need to be updated often, requiring fresh content and creativity to attract viewers,” said Anthony Uhrick, vice president of sales and marketing for NextWindow. “However, with dynamic signage, ads could be adaptive and advertisers could continually refine their message, swapping out offers in response to what works. Instead of sticking with a single campaign, advertisers can dial in different themes

and deploy a dozen appeals and drop the ones that don't work."

For many companies deploying digital signage, a third-party graphic design agency is the option of choice for creating and managing rich media assets; in some cases, an in-house designer is the way to go; and other times, the smart move is a blend of the two.

But even if you go the third-party route, make sure you have at least one person on staff with a basic knowledge of rich media and design, for last-minute emergencies and day-to-day maintenance.

"It's important to make sure there are resources, ideally someone internally who knows Flash, to support the medium and make it as cost-effective as possible," said Mona Lee-Tam, director of marketing and promotions for The Nuance Group, the world's largest operator of airport duty-free shops.

Nuance has used digital signage to bring travelers into its stores and market to them once they're in; having access to the right content at the right time is key to the operation. "Having someone internal also allows for quick turnaround. I wish we fully understood how much creative content is required to fully maximize the medium," Tam said.

### Playlists, loops and layers

One of the legacies of television and

## LEAVE ROOM FOR EMERGENCIES

To make your screens more valuable to your customers, consider leaving flexibility in your media schedule for regional content – such as emergency reports, fire alarms, Amber alerts and local breaking news. All of these can be integrated so that they are delivered automatically.

Of course, this is probably not the primary motivator behind the purchase of the screens, but it's an easy and inexpensive way to provide real value to your audience, and generate goodwill in the process.

radio broadcasting is the concept of the playlist — a scheduled list of media assets that are to be delivered either at a certain date/time or in a certain order.

The term playlist has migrated to the world of digital signage, but different companies define it in different ways. In some instances, it refers to a full schedule of every file that will be played at specified times; in other usages, it refers to a dynamic set of rules that chooses assets based on criteria such as time of day (also called "dayparts"), seasonal changes, events and in-store promotions.

While classic broadcast playlists may be used for digital signage programming, more and more often they morph into the concept of a loop, or the repetition of one or more media assets in a systematic fashion. For instance, a display in the clothing section of a department store might be programmed with a loop of ads for seven or eight different brands. Some software applications replace playlists with a dynamic programmable loop, where at the scheduling stage traffic managers enter instructions on how to play each ad, and the software automatically generates a loop for every screen, for every daypart at every location.

Loop length is the amount of time it takes for the loop to repeat — or, put another way, the amount of time it would take a customer to see the same spot twice. Planning a loop length requires knowledge of customer traffic patterns and dwell times. The length of the loop should be proportionate to viewer dwell time to optimize the “opportunity to see” each ad. The fixed length of the loop is maintained by insertions of various default filler content in the slots that are not occupied by paid ads.

Digital signage software allows for segmentation of the screen into various regions — analogous, for instance, to the crawling text across CNN. Screens can be broken into multiple segments for various purposes — for instance, it is common to see a sliver of screen

### WORKING WITH THE CREATIVE TEAM

Digital signage content has its own special needs, and chances are your creative team will need to be brought up to speed on its unique requirements. Here are some things to go over with your art department:

- Make sure they understand the process — that this media is going to be delivered electronically in an automated fashion. Make them aware of the locations where the screens will be, to get inside the mindset of the viewer.
- Help them understand who the viewer is likely to be. Provide the team with as much demographic and psychographic information on the audience as possible.
- Emphasize the importance of using high-quality source materials when creating new assets. The final product will be displayed to the world in high definition; it needs to look great.
- Explain the amount of time each item will be on screen. A visual masterpiece that requires several minutes to fully appreciate will be wasted in a 30-second loop. Give your artists all the detail you can about how and when the final product will be shown.

real estate devoted to local weather conditions, while the larger window runs promotional content and special offers crawl across the bottom.

“Many advertisers, however, insist that

their ads should always be played on full screen, so the system should be capable of switching from split screen to full screen when required, if you want to satisfy those clients,” said Brian Dusho, executive vice president of BroadSign International.

One of the more sophisticated applications of digital signage involves layering, in which bits of content can be stacked on top of one another, with specified degrees of transparency. For instance, if the same ad is running in several markets but with minor text differences, it could be built with two layers — a text layer and a graphics layer. The graphics layer could stay the same in all markets, with just the text changing locally, reducing the amount of rendering needed.

Companies deploying digital signage often find the need for multiple playlists, based on separate contingencies: time of day, day of week, location within the store, etc. In a grocery store, for instance, separate content would be needed for the meat, produce, pharmacy and canned goods departments; those playlists might be different in the mornings from the afternoons due to the demographic of the shopper. So far, that would be a total of eight unique playlists needed, and additional conditions might dictate the creation of even more.

“This is taking integrated marketing to

**“Most marketing is designed to get people into the store; digital signage allows you to integrate that strategy with point-of-decision marketing.”**

– David Little, Keywest Technology

the next level, by targeting the customer with communications that are most likely to help them make a purchase decision,” said Little. “Most marketing is designed to get people into the store; digital signage allows you to integrate that strategy with point-of-decision marketing.”

### Allowing room for growth

Like any IT endeavor, a digital signage network becomes more complicated with each little bit of growth. Managing the resources needed to run a few screens in a single location is one thing; managing a few thousand screens in a few hundred locations is another matter entirely.

But they are the same type of challenge — only different in terms of scale — so it makes sense to plan for growth from the beginning.

The biggest consideration here involves the storage of media assets. Will they reside on a central database, streaming as needed to thin clients powering the screens? Or will the screens be

## CHAPTER 4 Taming the content beast

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hooked up to more robust clients that are capable of storing media locally, updating themselves on a scheduled basis?

Both approaches have their pros and cons. The two-tier approach is less expensive on the front end, since thin client media players are much less expensive than dedicated computers at each location. And it can be much simpler to set up and administer. But for very large networks, having enough bandwidth to support this setup can be a challenge.

The distributed network approach is indeed more expensive at the outset, but for large networks it may be a worthwhile choice. Bandwidth needs are lower, since the clients can update themselves and download content after hours, and location managers can be allowed greater flexibility to make playlist and content changes with this approach. But maintenance becomes an issue, as there are more machines with more moving parts that will need on-site attention when something goes wrong.

Maintenance of the project as a whole must be considered, too. Things break — it's a fact of life.

“Nobody likes to think about maintenance, but it must be considered before any digital signage network grows beyond the initial pilot,” said Little. “Maintenance will be more involved

than a standard IT network because it involves media devices and potentially special interfaces such as touchscreens and audio that all have their separate issues. The best way for most network operators to handle day-to-day maintenance issues is to subcontract the work to a competent AV systems integrator or other third-party service company that can cover their needs.”



## COMPRESSION TECHNOLOGY MAKES HD PRACTICAL

No guide to digital content creation and management would be complete without a brief discussion of video. After all, video may be the most important type of digital signage content, and it has some unique characteristics that demand adequate system resources.

Video is basically a sequence of still images presented in rapid succession to create the illusion of motion. There are 30 of those still pictures, or frames, per second with ordinary television and up to 60 frames of digital information in high-definition television with the greatest resolution, known as 1080p. With 1,920 individual picture elements, or pixels, on each of the 1,080 individual lines that make up a single frame, and 60 of those frames per second, HD in its native form calls for significant storage and network bandwidth.

In fact, native 1080p produces a whopping 3Gbs (gigabits per second) of information. Even the next step down in the HD resolution pecking order, 1080i – or 1,080 interlaced lines, each with 1,920 pixels at 30 frames per second – produces 1.5Gbs of data.

Fortunately for digital signage content creators and managers, several encoding technologies have emerged to reduce the necessary storage and bandwidth to manageable levels.

Currently, MPEG-4 AVC (advanced video codec), also known as MPEG-4 H.264, has swept into the HD realm, significantly reducing the bandwidth and storage requirements for HD video. For example, the 1.5GBs of data necessary for one second of 1080i HD content can be encoded with MPEG-4 AVC to a mere 8.5Mbps (megabits per second) without introducing noticeable artifacts into the image. Best of all, MPEG-4 AVC is at the beginning of its life-cycle with lots of room for further reductions in data rates in the future.

Beyond MPEG-4, other compression formats and technology such as VC-1, which has gained the full support of Microsoft, and JPEG2000 are beginning to advance from the labs into integrated solutions for HD encoding. Additionally, MPEG-4 AVC successors are planned for the day that this remarkable compression algorithm reaches its peak performance.

So how does this play into the discussion of digital signage content and management? Simple: Mammoth HD file sizes require higher performance servers with greater storage as well as more bandwidth with its associated expenses. HD encoding technologies relieve digital signage content creators and managers of these added expenses and at the same time, assure them that the HD content played back from their networks will look every bit as good as what their audience sees at home on their HDTV sets.

– David Little, director of marketing, Keywest Technology

# Appendix Additional information and stories

## An overview of media file formats

### Image Formats

There are many, many different image formats that have been developed over the years. However, only a few are used in digital signage, and most of those come from the Web. Only the most commonly used are described here. Check with your vendor for compatibility, since not all formats are supported on each product.

**GIF (.gif)** stands for Graphic Interchange Format. It is a standard format for images that was developed by CompuServe to be a device-independent method of storing pictures. GIF allows graphics to be displayed on a variety of graphics hardware and is intended as an exchange and display mechanism.

**JPEG (.jpeg)** (pronounced “jay-peg”) is a standardized image compression mechanism that is widely accepted. JPEG stands for Joint Photographic Experts Group, the original name of the committee that wrote the standard. JPEG is designed for compressing full-color or grayscale images of natural, photo-realistic images.

**PNG (.png)** is a new Web format. It was developed to compete against the GIF format, but aside from efficiency in file size, it does not offer any additional benefits. While not as common as previ-

ously developed formats, it has been adopted by many digital signage vendors.

### Audio Formats

**MP3 (.mp3)** files are actually MPEG files originally developed for video by the Moving Pictures Experts Group. MP3 files are the sound part of the MPEG video format. MP3 is one of the most popular sound formats for music recording; the MP3 format is one of the best choices when it comes to compatibility.

The **RealAudio** format is proprietary and was developed for the Internet by RealNetworks. In addition to audio, it also supports video. The format allows streaming of audio (on-line music, Internet radio) with low bandwidths. Sounds stored in the RealAudio format have the extension .rm or .ram. Most digital signage systems do not support it because of licensing issues.

The **WAVE (.wav)** format was developed by Microsoft. There is no licensing fee and it is commonly used. Most digital signage vendors support it. WAVE format files have the extension .wav.

### Video Formats

**AVI (.avi)**, or Audio/Video Interleaved file format, is common on PCs, but support among digital signage vendors varies.

**MPEG (.mpeg/.mpg)** may be the most confusing format because so often,

MPEG format codecs exist in commercial versions and in the public domain. They are often not compatible with one another and can interfere with playback — check with your digital signage vendor for compatibility. Different generations of MPEG are listed as .mpg1, .mpg2 and .mpg4. MPEG 4 is supported in the latest Windows media players and shows promise but is not universally supported.

**Quicktime** (.mov) is an ISO standard for digital media. It was originally created by Apple Computer Inc. and used in the Macintosh. It brings audio, animation, video and interactive capabilities to personal computers and consumer devices. Support among digital signage vendors varies.

**WMV** (.wmv) is a Microsoft format that has the same cautions as AVI.

*(Excerpted from “Enterprise Digital Signage Handbook” by Dan Lesser, reprinted with permission.)*

## An abbreviated digital signage glossary

*(For a more complete glossary, visit [www.digitalsignagetoday.com](http://www.digitalsignagetoday.com).)*

**A/V Distribution System:** The technology used to carry the video and audio signal from the digital signage player to the display device.

**Content:** The full-motion video, audio, promotions, messaging and information you wish to deliver. It may include pre-recorded information, news feeds, or pricing and merchandising information delivered from the POS system.

**Content Distribution Server:** The computers where content is stored, managed and distributed to players via a network.

**Content Management Software:** Specialized software used to schedule the delivery and playback of content at multiple devices, as well as to monitor performance and track and report on the execution of the scheduled events. More advanced content management software packages also include authoring features and most include screen formatting and production capability for screen crawlers and other information feeds.

**Digital Signage:** The creation, management, scheduling, distribution and

display of electronic media with information of particular interest to a selected audience.

**Display Devices:** The actual hardware displays on which the content is shown. These include plasma and LCD displays, projection onto a screen or holographic device, interactive kiosks or CRT devices, and any number of emerging display technologies (OLED, electronic ink, PLED, etc.).

**Distribution Network:** Provides the delivery and feedback infrastructure to pass information to and from the display locations. The network can take multiple forms: satellite, Internet, LAN, WAN or wireless.

**Multi-channel Player:** A player capable of streaming more than one channel of unique content at a time.

**Player:** Typically PCs or special-purpose media devices used to store and deliver content to the display devices on the defined timetable.

**Playlist:** A list of clips and their play order by time or other heuristics.

**Playlog:** A record of information created from the digital signage system reflecting the content played, the system performance and other data.

## Ten commandments of content

By Nikk Smith

*This story was published April 9, 2007, on [digitalsignagetoday.com](http://digitalsignagetoday.com).*

Good content is at the heart of all successful digital signage. Sadly, our industry remains firmly focused on hardware, and rarely do we find projects that give enough priority to content in the planning and rollout stages.

If the sole interface with your audience is not effective, it is of little relevance that you have the most technically advanced delivery infrastructure. Any digital signage solution can and will be rendered ineffective by poor content.

So how do we avert disaster? With something as infinitely flexible as content, it's a tough job to provide any hard and fast rules that apply to the  $n^{\text{th}}$  degree.

The only true way of ensuring your content works is to test it; monitor the audience reaction and either start again or refine your design to take account of any deficiencies. Don't be fooled into thinking that your content will ever be perfect, though. The challenge is what makes this such an interesting journey.

During the past few years working on client projects, we've found that certain

high-level approaches work and others don't. As a result of our years of pain, I decided to concoct some general rules that provide a baseline against which we can try to measure our work. Taking these rules into account when you begin your content production process should help keep things effective.

### **Commandment 1: Thou Shalt Not Lose Focus**

When your content is message-based, you must always retain a focus on the salient points. Promote only the core message of your content and you will create more impact.

Don't mix messages — try to keep things clear and clean. It may be tempting to add lots of detail, but the likelihood of it being seen or recalled is low.

If you have a choice or influence, try to reduce any outside interference from other zones on the canvas such as the network's brand. Consider branding the physical enclosure of the screen — why waste valuable dynamic space on static content?

### **Commandment 2: Thou Shalt not Misuse the Timeline**

Digital signage content is inherently more flexible and eye-catching because we have the benefit of a timeline — but this doesn't mean you have to be the next Spielberg.

Remember, static posters and their associated design methods have worked for decades, so despite their inherent lack of flexibility the formula for communication is well proven.

Make sure that the core message is present for more than 90 percent of the timeline. This minimizes the chance that a cursory glance will reveal nothing but vague imagery.

### **Commandment 3: Thou Shalt Not Use Ticking Text**

This may be controversial, but I believe that tickers are not a good method of communication. Out-of-home media is not a passive environment like TV — the audience is rarely sitting still and focused on the screens.

A ticker provides a simple way to squeeze lots of text into a small space. The consequence of this approach is that the content can't be read in one glance. Get your message right and you should have no need for ticker effects, including those used on large-format text.

Tickers have their place. They're fine for content such as travel information, stock updates and news headlines.

### **Commandment 4: Thou Shalt Employ Movement**

Use motion to capture attention and draw the eye in — but don't overdo it.

The eye is most attracted by the onset of motion and changes in luminance. Content that includes these effects is, therefore, typically more effective at capturing your audiences' eye.

Contrary to popular opinion, however, the appearance of objects is not as effective. Too much constant binary activity, such as flickering and blinking, does not help readability and is more easily filtered by the brain.

### **Commandment 5: Thou Shalt Not Dismiss Audio**

Audio can be very effective at capturing attention. It's much harder for your audience to filter out in a visually busy environment.

The same rules apply as per motion — capture attention with changes, not continuous white noise.

Bear in mind the negative effect audio can have on people who have to endure it for long periods.

### **Commandment 6: Thou Shalt Use Relevant Imagery**

Use imagery in support of your core messages. Capitalize and leverage the dollars spent on multi-channel campaigns by using the same style and imagery.

Support your copy — telling people to send an SMS? Show a phone.

**Commandment 7:  
Honour Thy Fonts and Typography**

Select fonts that are easy to read without compromising the brand.

In short-throw viewing environments, words that comprise initial capital letters followed by lower-case letters can be read faster than words that employ all upper-case letters.

A general rule taken from the traditional signage industry is that text 1 inch high can be seen from up to 25 feet away. Maximum impact is attained much closer, however.

Consider your target screen size and the pixel pitch to work out the ideal point size required. It may mean rendering different content versions for different screen/viewing environments.

**Commandment 8:  
Thou Shalt Engage Thine Audience**

Give people a reason to look. They're doing you the favor.

Your content needs to be stimulating in some way. It can be entertaining, informative, good-looking or humorous and preferably a combination.

If you get it right, you have the potential to repurpose for other marketing channels — why be the poor cousin when you could be the innovator?

**Commandment 9:  
Thou Shalt Not Undervalue Contrast**

Ensure that there is significant contrast between your core message and the background.

Among others, white on yellow does not work, especially in high ambient light environments.

Consider using drop-shadows or other outline methods where print-based brand guidelines dictate difficult combinations.

**Commandment 10:  
Thy Platform is Thy Friend**

Choose content formats that work best on the target platform. Take advantage of any proprietary facilities available to you such as data integration, content management and dynamic rendering.

Avoid formats that are not well supported, as they will only cause headaches in the long run.

*Nikk Smith is technical director of Pixel Inspiration, a U.K.-based digital media firm with a background in advertising, marketing, managed services and technical consulting.*

## Interactivity: Key to digital signage?

By Marvin Lazaro  
Editor, *Self-Service World and Kiosk Marketplace*

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**LOS ANGELES** — Dave Jenssen's message to attendees of Digital Signage 2007 was clear, even if it is one that's not commonly held: Consumers interacting with what they see on digital signage is much more effective than static advertising.

"Digital signage is getting consumers closer to the products, but it's not just messaging," said Jenssen, the vice president of New York-based Times Square2, a partnership between Reuters news service and Nasdaq, the largest U.S. electronic stock market. "It's getting people to do something."

While the immediate future of digital signage is relatively clear, what's around the corner for digital signage is not, Jenssen said. He compared its current usage to five years ago, when the technology was still in its infancy.

"I can't see what will happen in the next two or three years, let alone the next five. Five years ago, no one thought we'd be at the point we're at now."

The conference was held at The Stan-

dard Hotel in downtown Los Angeles. Approximately 140 people from around the nation attended, representing 65 companies.

Times Square2 has worked with its clients to produce and display an array of advertising in the heart of New York City.

According to the Times Square Alliance, a group which works to improve and promote Times Square, approximately 31.4 million people walked through Times Square in 2004, most having no choice but to see the digital signs that proclaim their messages 24/7. Times Square2's screens cover 19,200 square feet across three different buildings, viewable from all angles of the square.

The company's list of clients includes Nike, whose campaign enticed watchers to call a special number to design a pair of Nike sneakers while they watched the process take place on the screens. The interactivity reached its peak when Nike awarded 240 of the callers with the sneakers they designed. And Time magazine enhanced its "Person of the Year" campaign with an invitation to viewers to call a special phone number, upload pictures of themselves and then watch as their pictures were superimposed on magazine covers.

A different campaign, this one from Dodge, used the classic game Rock 'Em Sock 'Em Robots. Watchers were encouraged to call a phone number, log



in as either the blue or red robot and wait for their opponents. Using a mobile-phone keypad, participants were able to control their digital robot and compete against other users.

Jenssen encouraged attendees to rid themselves of traditional thinking, namely the 30-second television spot, when it comes to digital signage. Jenssen called it a “barrier to growth,” adding that the execution of the advertisement is the key to effectively reaching a target audience.

Other barriers include the concept of free-range interaction and the current level of technology, he said. But advertisers should take advantage of the technology available. Short Message Service, Web-based and GPS applications, the ability of consumers to take photos with their mobile phones, and bluecasting, which allows consumers to receive and download digital content on Bluetooth-enabled devices, are all heavily used today.

“For consumers, digital signage should be all about being part of it, buying from it, competing on it, being seen on it and using it,” Jenssen said, regardless of whether it is in a store or on the street. There is a growing acceptance, he said, of seeing and doing things in public places, so consumers are more prone to get involved.

“If you can get the consumer to play,

then you can get your message across,” he said.

### Also presenting

Warren Harmon, section head for video, audiovisual and photography for the Mayo Clinic, chaired the conference. Other presenters included Scott Kushner, chief executive of MediaPlace and developer of Harley-Davidson’s digital-media campaign, and Pat Hellberg, director of Nike’s brand design media who developed digital signage campaigns for Nike.

Synergex’s Eric So, American Honda Motor’s Ann Palmer, Aerva’s Sanjay Manandhar, AccuWeather’s Scott Homan, ISuppli Corp.’s Mark Kirstein, and Canadian Broadcasting Corp.’s William Atkinson also presented.

Panel discussions included “Choosing the right vendor partners for your digital signage,” moderated by Jeff Porter, executive vice president of dynamic signage for Scala Broadcast Multimedia, and a Q & A discussion hosted by Aerva’s vice president of business development, Uri Feldman.

## McDonald's serves up digital signage

By Bryan Harris  
Editor, Self-Service World and Kiosk Marketplace

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In Chicago, a newly rebuilt McDonald's incorporates content-managed digital signs. If successful, the installation could take digital signs from novelty to common-place status in McDonald's stores.

Operations manager Wayne Adamczyk has managed McDonald's stores for more than 30 years. In this blue-collar, south-side neighborhood where Realtors still advertise in Polish, Adamczyk pays close attention to his customers, many of whom he knows by first name. He has no doubt the signs already have been successful.

"It's very difficult to measure return on investment," Adamczyk said. "But it's very easy for me to go to five stores within 10 minutes of here, and customers there talk about this. I want people to say 'This is my kind of McDonald's.' It's all about personalizing the location."

Adamczyk said he wanted to give the signs a Las Vegas feel, with lots of color and motion. He said traditional in-store signs can't compete, because they are too easily lost in the surroundings.

"I can ask a manager what's on the (traditional) signs out here and they can't tell me, because after two days it's wallpaper," Adamczyk said.

TAP TV built the deployment in three different parts running on the same system.

Eight 15-inch LCD flat screens set side-to-side on the face of a ceiling overhang above the registers greet customers. The screens show synchronized marketing content continuously. For example, a McDonald's logo flashes onto a screen on the far right and zooms to the screen on the far left. Similar cross-screen effects are done with promotions on premium coffee and breakfast dishes.

Then there are 42-inch screens in the dining areas that run action sports videos and McDonald's ads. The screens are divided into sections. The videos play in the largest portion of the screen. Along the left side, scrolling full-motion video previews invite customers to text short codes from their mobile phone to change the video.

"Think of this like a video jukebox," TAP TV chief operations officer Tim Dorgan said.

Dorgan said the phone numbers collected when customers text in short codes were not yet being used for marketing, other than a 'thank-you' message broadcast back to each user. But collecting

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the numbers could let them later send more promotional messages to users.

The third part of the deployment, inside the Playland, consists of another big screen with a camera and, across the room, a 3-foot-tall, Grimace-purple kiosk. The touchscreen plays cartoons and marketing content. Kids can use the kiosk to choose which cartoons will run. For birthday parties and special occasions, a manager code can stop the video and turn on the camera, allowing the children to see themselves on TV.

The nerve center is the store's tiny office, which looks like a server room, including the several CPUs the digital signs require, and the many other computers required to run a modern McDonald's. TAP TV chief executive John Malec said the Linux-based computer systems use 2.2ghz AMD processors, Nvidia graphic cards and 250 gigabytes of storage per computer — which gives many of their clients more than 1 terabyte of content storage.

He said TAP TV had almost completed a user-friendly GUI toolkit which would enable clients to develop their own in-store television advertising on-site.

"We already have the toolkit built," Malec



*A newly rebuilt McDonald's in Chicago incorporates content-managed digital signs. Eight 15-inch LCD flat screens set side-to-side show synchronized marketing content*

said. "We just don't have the 'user-friendly.' That will be rolled out in two to four weeks."

The very technical behind-the-scenes technology couldn't look simpler from the front end. Throughout the store, logos and commercials in bright, friendly McDonald's colors continually bounce around. Early on a recent Thursday morning, customers stared at the flashing images while they ate breakfast. Robin Basilitis said it was her first visit back to the location since the store was rebuilt.

"The old one didn't have monitors," she said. "They look nice. Nice coloring."

Maria Escoto ate her breakfast sandwich in Playland, with her 2-year-

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old daughter, and had picked up a birthday party info card. They watched the plasma TV together.

“I’m watching Scooby Doo,” Escoto said.

Adamczyk is pleased with his new method of reaching customers, and the only question he still harbors about the system after seeing his customer’s reactions was how to expand it. His answer: An \$80,000 outdoor digital sign hung under the store’s traditional golden arches. The Optec sign, which is actually two 6’ x 12’ digital signs hung back-to-back on the sign post (where the old clear-plastic-letter signs are usually placed) would play the same TAP TV content visible in-store.

“You’re going to see the same thing out here that you can in there,” Adamczyk said. “(His digital signs are) a work-in-progress. They’re baby steps.”