



Digital Signage Certified Expert



1

Welcome to the DSCE Program!

- The program embraces the fundamentals and key elements of successful digital signage rollouts.
- It delves deeply into the digital signage industry and examines the disparate parts and complexities and interaction of digital signage solutions.
- Basic design will be covered as well as each of the component parts - displays and mounts, digital signage software and players, signal distribution, as well as infrastructure and integration.
- The course explores content and content creation to support the axiom that "relevant content is king".
- From a financial perspective, there will be analysis of several possible business models – including the alternative (and proven) approaches to ensuring return on investment and/or return on objectives.
- An online open book exam will be delivered via email, and upon completion a certificate provided.

Enjoy your journey into digital signage!



2

A First Look...

- Digital signage is one of the most exciting and fastest growing segments of the commercial audiovisual, IT, traditional signage, advertising, and content creation industries.
- It has far reaching implications and opens expansive new markets for systems designers, integrators, content creators, and end users alike.
- From the obvious "explosion" of the retail digital signage market, to the unique applications for indoor venues such as corporate communication and wayfinding, to education and transportation, **digital signage cannot be ignored.**



 **DSCE** Digital Signage Certified Expert

A First Look...

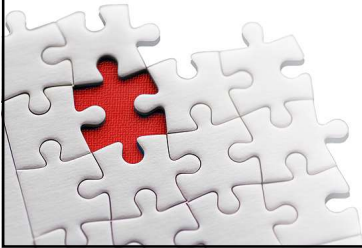
- The problem we face with this market, is that digital signage appears quite simple on the surface, but...
- It becomes a maze of interconnected and complex technologies that all act in unison to produce the images we see on screen.
- The challenge this poses to the designers, installers, and service providers not to mention end users wanting to enter this space, is one of immersion and full understanding.



 **DSCE** Digital Signage Certified Expert

A First Look...

- Many companies have parts they understand, be it displays, networking, or content... but few understand the whole "picture" of what digital signage requires to be successful.
- **To truly succeed in this space, a company must understand all the disparate parts that make up the entirety of a digital signage network, and understand how to properly discover, recognize, and promote tangible value and returns from those networks.**



 **DSCE** Digital Signage Certified Expert

5

The 7 Key Elements of Digital Signage

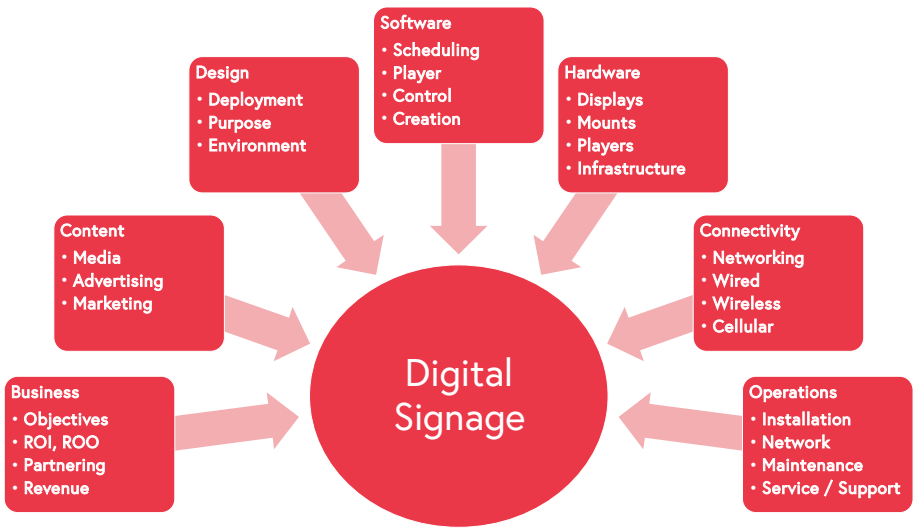
- In order to facilitate an understanding of what is involved, the Digital Signage Experts Group (DSEG) presents *The 7 Key Elements of Digital Signage*.
- This easy to use and understand reference "tool" is an umbrella of key elements in every digital signage project whether it is a single panel application in a local school or a multi-thousand screen rollout for a major QSR chain.
- *The 7 Key Elements of Digital Signage* in the most effective order are:
 1. Business
 2. Content
 3. Design
 4. Software
 5. Hardware
 6. Connectivity
 7. Operations



 **DSCE** Digital Signage Certified Expert

6

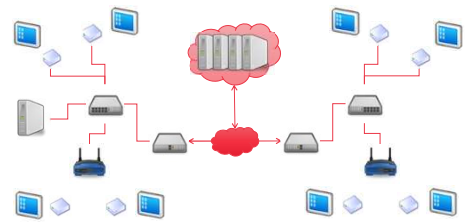
The 7 Key Elements of Digital Signage



DSCE Digital Signage Certified Expert

An Industry Defined

- Digital signage is a subset of the AV, IT, and signage industries wherein digital displays of all types are used to replace and thus enhance traditional static signs.
- Instead of tuning in a television station in a home environment, commercial applications show specially prepared visual images to make them function like signs but in an expanded manner.
- Digital signage is a network of interconnected digital displays that is centrally managed and addressable for targeted information, entertainment, merchandising, and advertising.



DSCE Digital Signage Certified Expert

The Paradigm Shift!

- As AV and IT have already converged, we must now add an understanding of content, so get prepared!
- It is no longer about technologies unto themselves; rather what the benefits are for the end users.
- AV and IT products "look" like commodities.
- **Differentiation is the key.**
- Value must be understood!
- Value must be added!



 **DSCE** Digital Signage Certified Expert

Evolution of Signs



 **DSCE** Digital Signage Certified Expert

Evolution of Signs

- Prehistoric man created the original idea of signage in cave paintings, used as:
 - Communication tools
 - Warnings / security
 - Historical records
- Egyptians used signage for:
 - Decoration and adornment, for the first time
 - Education
 - Historical Records
 - Communication



 DSCE Digital Signage Certified Expert

11

Evolution of Signs

- Medieval Europeans used signage, for the first time, in advertising and individual shop signage, as a means of communication and increasing sales.



 DSCE Digital Signage Certified Expert

12

Evolution of Signs

- Signage in the 20th Century concentrated on soft drinks, cigarettes, gas stations, and tourism.

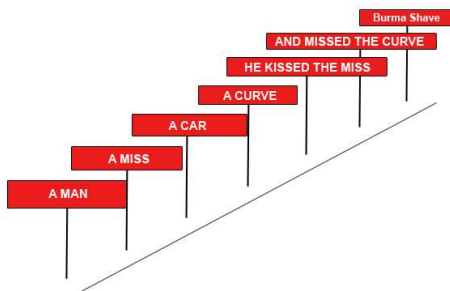


 DSCE Digital Signage Certified Expert

13

Evolution of Signs

- Paying homage to Burma Shave gives credit for not only the first advertising campaign, but the **first example of involving the viewer in a dynamic series of interactive messages.**



 DSCE Digital Signage Certified Expert

14

Evolution of Signs



- Las Vegas: The City of Signs, literally invented the concept of digital signage.
- We celebrate incandescent lights and neon tubes, as we pay homage to the history of signage in Sin City.

 DSCE Digital Signage Certified Expert

15

Enter Digital Signage

- Scoreboard and chronograph digital technology has been in existence for years.
- **Changeable signage didn't appear until the famous Times Square Zipper. The Zipper notified us of national emergencies, worldwide celebrations, and electoral results. The Times Square Zipper paved the way for "out of home" digital messaging.**
- The next array of digital signs appeared in airports and mass transit systems - cable news split screens or tickers, and custom-built stadium scoreboards.
- While return on investment was a dream, these signs proved that communication to large masses was possible and practical. Sony's trademarked "Jumbotron" became the de facto standard of stadium displays and established digital signage as an advertising medium.



 DSCE Digital Signage Certified Expert

16

History of Digital Signage

- Following "giant" displays, we experienced a period of in-store presentations via TV+VCR, and more recently TV+DVD combinations.
- The "tragic flaw" was the use of infomercials lasting 5-10 minutes with the typical customer only viewing 5-10 second segments and missing the "big" picture.
- The manual distribution of media also proved to be both inefficient, and expensive. This method hasn't altogether disappeared, however, and many retailers run hour-long advertising loops for up to a month.



... But times are changing.

 DSCE Digital Signage Certified Expert

17

Convergence Factors

- End users and integrators of all types of signage all agree that digital signage has become a powerful medium within the last few years. Many factors contribute to the timeliness of this type of advertising, and they include:
 - Decline of traditional media
 - Internet access and smart phones
 - Falling display prices
 - Better signal compression and falling bandwidth prices
 - An abundance of creative content providers
 - A plethora of software options
 - Opportunities for "real-estate grabs" to place the message

"When application, technology, and price converge, a window of opportunity is created."

 DSCE Digital Signage Certified Expert

18

What Are Digital Signs?

- Digital signage may take many forms, but at its core, it consists of the following concepts:
 - Replacing a static sign with an "electronic" display that can present a dynamic message, either singly or in multiples, connected to a network either wired or wireless.
 - The capability of management in real time, distributing and adapting content as required.
 - Digital signage may feature interactivity and collecting and analyzing data about the viewers.
 - Digital signage may include mobile applications as well.



 **DSCE** Digital Signage Certified Expert

19

Digital Signage Terminology

- Digital signage can be called by many different names:
 - Digital Out Of Home (DOOH)
 - Dynamic Digital Signage
 - Dynamic Signage
 - Narrowcasting
 - Datacasting
 - Digital In-Store Merchandising
 - Electronic Display Networks
 - Retail Television
 - Captive Audience Networks
 - Digital Media Networks
 - Electronic Billboards
 - And more...



Obfuscation!

 **DSCE** Digital Signage Certified Expert

20

Digital Signage Advantages

- Greater message impact by incorporating dynamic images that change including graphics and full-motion video.
- Messages can be changed faster, easier, and less expensively than replacing printed signage.
- Messages can be altered based on time of day, day of week — even the weather.
- Provide regional, local, and even site-specific content efficiently and inexpensively.
- Centralized monitoring, management, and distribution, improves efficiency.
- Time required to deploy new messages or information can be significantly reduced.

Enhance the viewer experience, modify behavior
and promote engagement!

 DSCE Digital Signage Certified Expert

The Digital Signage
Market Quantified

 DSCE
Digital Signage Certified Expert

The Digital Signage Market

The Digital Signage Market Quantified

- Digital signage is best defined as "a network of displays that can be remotely managed and whose business model revolves around merchandising, advertising, entertainment, corporate or educational communication."
- This includes:
 - Retail
 - Restaurants (QSR, Fast Casual , Fine Dining)
 - Convenience stores
 - Corporate
 - Hospitality
 - Education
 - Healthcare
 - Entertainment
 - Transportation
 - Security
 - Specialty Applications



 DSCE Digital Signage Certified Expert

23

The Reality of Market Data

The Digital Signage Market Quantified

- Market research attempts to quantify the digital signage industry in size and then forecast growth.
- Referring to The 7 Key Elements of Digital Signage you begin to understand the complexity if not the impossibility of this task.
- To accurately quantify the dollar value of the industry we must know hardware and software sales, connectivity expenses, content creation and acquisition costs, design and engineering fees, integration costs, network operations costs, etc.
- **Nobody has yet collected this data with any real degree of accuracy.**
- These are the unvarnished facts, but there are indicators that give us a good probability of the direction of the digital signage industry and even some data that can give us a factual insight into the size and growth we want to review.



 DSCE Digital Signage Certified Expert

24

Experts Opine: What We Do Know

The Digital Signage Market Quantified

- Over the last several years the digital signage industry overall has grown at just under 10% per year. Some segments have grown at >20% per year.
- A noted research firm reports:
 - There are >3 million displays (26" and above) for digital place-based video in North America (This represents nearly half of world).
 - There are over 500 ad-based digital signage networks in North America.
 - Approximately 50 companies are the primary suppliers in the industry with more than a thousand others also participating (the industry supply side is like a long, low flat pyramid).
 - Over 80% of displays in the market are networked.
 - Approximately 50 CMS software companies drive about 90% of all display networks.



 **DSCE** Digital Signage Certified Expert

25

Why the Digital Signage Market is Growing

The Digital Signage Market Quantified

- Digital signs offer a more welcoming and interesting environment directed at the viewer.
- Most critically, digital signage can improve the customer experience for every business and gives them the most relevant and targeted messages at the most appropriate time.
- Research shows that digital signs receives >10X more eye contact than traditional static signage.
- Digital signage provides the opportunity for brand building as well as influencing viewers behavior by creating a stimulating environment where the viewer's long and short-term behavior can be shaped.
- Ad based businesses have reported double digit upticks in sales and customer loyalty.
- Information based systems have shown improved productivity and viewer satisfaction.
- According to Arbitron, one in three consumers stated they made an unplanned purchase after seeing a product or service advertised on a digital sign.

Research shows that > 75% of people see digital signage every day.

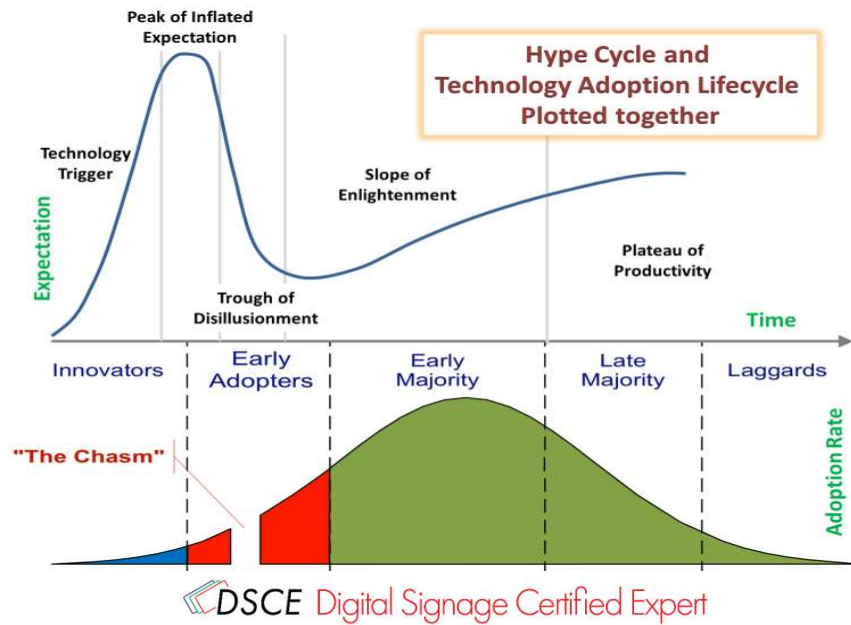
We spend on average 8 hours a day in front of one type of screen or another.

 **DSCE** Digital Signage Certified Expert

26

Hype Cycle and Technology Adoption

The Digital Signage Market Quantified



27

The Digital Signage Market

The Digital Signage Market Quantified

- Digital signage has reached a "tipping point". To date it has been a technology "push", but as marketing and communications goals become clearer and digital signage continues to prove its ability to achieve these goals, marketing "pull" is rapidly accelerating.



DSCE Digital Signage Certified Expert

28

Market Drivers

The Digital Signage Market Quantified

- Decline of traditional media creates demand for digital signage.
- Decline in prices converges with advances in technology.
- Efficiency and results of promotions encourages investment and expansion.
- Opportunity for top-line corporate growth via digital signage.
- Integration of digital signage with in-store or company centric databases enhances relevancy of content and stimulates growth.
- Requirement for more pervasive methods of communication.
- Focus on the experience as differentiator.



 **DSCE** Digital Signage Certified Expert

29

Barriers to Entry

The Digital Signage Market Quantified

- Specific Challenges:
 - **Lack of understanding of objectives and capabilities.**
 - Understanding that funding can be complex.
 - Some are still skeptical of ROI. Some of the ROI is a "soft" return on "hard" dollars spent and ROO is subjective.
 - Scalability has not been as efficient as hoped.
 - Due to the complexity in sales, buying cycles are long, typically a minimum of six months up to 18 months.
 - The time period for roll-out in multiple sites is long.
 - **Content design, creation, management and refreshment needs more understanding and improvement.**
 - **Analytics needs to come to the forefront.**



 **DSCE** Digital Signage Certified Expert

30

What We Know

The Digital Signage Market Quantified

- The digital signage market is here to stay and growing at a rapid pace.
- Technologies, applications, and prices have converged. Opportunities exist!
- Content and content providers are flourishing, and much more affordable.
- Analytics and metrics are now coming into play.
- ROI and ROO are now realities, and not a dream.
- Distribution, control, management, interactivity and feedback are the key elements to the success of a digital signage system.
- A clear objective must be understood, and the first place to start!

Opportunity is knocking,
for those who have the vision!

 **DSCE** Digital Signage Certified Expert

31

Integrators - Words to the Wise!

The Digital Signage Market Quantified

- There are several vertical markets to choose from, each with their own unique applications and challenges.
- Focus on a few that you are familiar with or passionate about!
- Invest in positioning and promoting your choice of vertical markets.
- Develop a better understanding of needs and usage modes for a digital signage network.
- Consider a customized design for selected target markets.
- Differentiate by offering compelling end-user solutions rather than simply displays.
- Convince end-users of tangible value with measureable ROI and ROO.
- Form meaningful alliances and partnerships.



End users look to companies that exhibit this wisdom!

 **DSCE** Digital Signage Certified Expert

32

Understanding Digital Signage: Natural Fit Applications



33

Natural Fit Applications

Understanding Digital Signage – Natural Fit Applications

- Let's look at what we call "natural fit" applications for digital signage.
- **In other words, where does it simply make good business sense for a business or institution to add digital signage to their current or future infrastructure?**
- For the end user it boils down to their objectives relating to ROI and ROO.
- Remember that the need "sells" the network.
- The sales and buying process clarifies the need.



 DSCE Digital Signage Certified Expert

34

Retail

Understanding Digital Signage – Natural Fit Applications

- Advertising applications especially in retail are a natural fit.
- Digital signage provides the benefit of changing the information on all signs at will depending upon the needs, including time of day, time of week, season, or promotion and managing the network from a central location.
- The ability to add interactivity with the viewer enhances the experience.
 - Advertising (use and placement of screens for audience impact)
 - Business to consumer and retail of all types



 DSCE Digital Signage Certified Expert

35

Corporate, Education, Healthcare

Understanding Digital Signage – Natural Fit Applications

- Corporate, education, and healthcare applications are typically focused primarily on the dissemination of information that is constantly changing.
- Digital signage provides real time change of the information on signs throughout the facility and do so from a central point of management.
 - Corporate communications and employee facing networks
 - Education (wayfinding, departmental, common areas, and facilities)
 - Healthcare (including hospitals, clinics, and doctor's offices)



 DSCE Digital Signage Certified Expert

36

Events, Entertainment, Sports

Understanding Digital Signage – Natural Fit Applications

- In sports, entertainment, and conference venues, digital signage can be as large as necessary for the entire event or small as dictated by the available space and viewership.
- These venues can present information in a manner to support their objectives with the only limitation being their budget, space, and creativity.
 - Exhibitions & Conventions (wayfinding, agendas, in-show advertising, stand displays)
 - Music, Sports & Entertainment (all venues and events)



 **DSCE** Digital Signage Certified Expert

37

Hospitality

Understanding Digital Signage – Natural Fit Applications

- Hotels and resorts are expanding beyond their room TV systems and embracing digital signage in common areas, not only in wayfinding, but increasingly connecting the viewer to events inside the property as well as the outside world.
- Restaurants are following suit in creative ways with digital menus, interactive entertainment systems, online ordering, just to name a few applications.
 - Hotels, resorts, and casinos
 - In house restaurants, catering and hospitality



 **DSCE** Digital Signage Certified Expert

38

Transportation

Understanding Digital Signage – Natural Fit Applications

- One of the first digital signage applications was at airports. Beginning with ticket kiosks, dynamic signs have spread to food courts, retail shops, and the common areas with the big video walls.
- Once again, the ability to change information in real time as needs arise and to tailor information to the time of day, week, season, or emergency notification is part of the allure.
 - **Transportation (including airports, mass transit, train and bus stations)**



 **DSCE** Digital Signage Certified Expert

39

Business, ROI, and ROO

 **DSCE**
Digital Signage Certified Expert

40

The Starting Point is Business!

Business, ROI, and ROO

- The 7 Key Elements are listed in order of complexity from the most to the least. While all The 7 Key Elements are critical, some are more complex therefore take "special attention" and should be addressed in the right order of decision making.
- **Research shows that the most significant percentage of failures in digital signage projects fall under the areas of poor due diligence up front, business planning, and strategy.**
- The business plan must begin with a clear understanding, consensus and articulation of the objectives or purpose of the digital signage network and **exactly** what you want the system to do.
- Digital signage must be thought of as a "mean to the ends" an end and not the end itself.
- In short, digital signage is a tool with a stated job to do.
- **The objectives are the statement and focus of that job.**
- **The stakeholders should determine the objectives with input from all parties involved.**

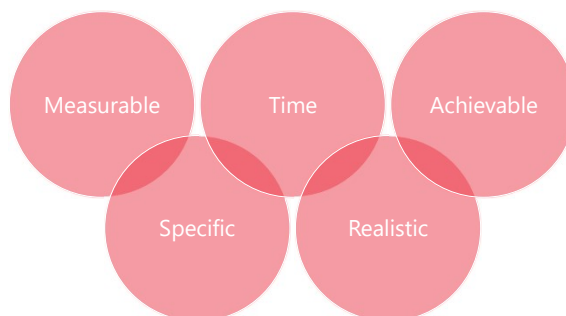
 **DSCE** Digital Signage Certified Expert

41

Stop Right Here!

Business, ROI, and ROO

- **Identify and articulate the specific OBJECTIVES of the project.**
 - Brand building
 - Customer experience / entertainment
 - Facilitating by function
 - Ad revenue generation
 - Information and / or wayfinding
 - Increasing efficiency
 - Enhancement of collaboration
 - Time saving
 - Technical support
 - Others - TBD by the stake holders



Be **SMART!**

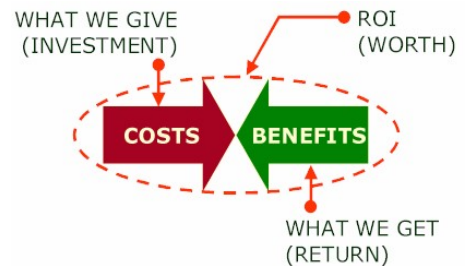
 **DSCE** Digital Signage Certified Expert

42

Digital Signage ROI - ROO & TCO

Business, ROI, and ROO

- After establishment of the objectives and as part of that process, there is nothing more important than return on investment (ROI) and its "roommate" return on objectives (ROO).
- Digital signage is a business with the potential for profit or loss. It **must** be planned for up front and calculated in a thorough manner. It will require constant attention during the lifetime of the network.
- What makes ROI and ROO so complex are the variables in digital signage.
- We will begin with a basic definition and then look at the variables in order to better understand the need for proper planning.



 DSCE Digital Signage Certified Expert

43

Return on Investment (ROI) Defined

Business, ROI, and ROO

- ROI is a common topic in digital signage, but few truly comprehend it and its implications.
- It is defined as a percentage, used as a measure of performance. It reflects the amount of money that is earned by the investment of capital in a proposal or project.
- ROI is the value of a project defined by the financial benefits gained, minus the cost of the investment.
- Financial people look at ROI in terms of the percentage return vs. the outlying cost.

$$\text{ROI} = \frac{\text{Profit from Investment} - \text{Cost of Investment}}{\text{Cost of Investment}}$$

 DSCE Digital Signage Certified Expert

44

ROO Defined

Business, ROI, and ROO

- Retail sales departments have measured ROI by tallying dollars spent by dollars received.
- **This, however, doesn't necessarily directly translate.**
- Savvy marketers typically measure returns based on whether their **objectives** are met.
- **Attainment of these objectives and assigning a dollar value to them, can ultimately determine the success of a given project whether in retail or in other vertical applications that are not ad revenue based.**
- This result of these calculations is known as Return on Objectives, or ROO.



 **DSCE** Digital Signage Certified Expert

45

Tangible VS. Intangible Benefits

Business, ROI, and ROO



- Examining ROI is simple when related directly to a point of sale. That data can be used to calculate the ROI for building that point of sale.
- **Digital signage differs in that there is usually no direct payment.**
- **The benefits of digital signage are more intangible and do not typically sell products directly.**
- **They do communicate valuable information and advertising, that may influence a customer to purchase your product or services.**
- This begs the question of how to measure the benefits.
- Digital signage generally follows one of three goals in its purpose:
 - Advertising products or services
 - Communicate information
 - Inform or entertain viewers to improve satisfaction / experience

 **DSCE** Digital Signage Certified Expert

46

Tangible VS. Intangible Benefits

Business, ROI, and ROO

- The key to measuring ROI is focusing on the identifiable and quantifiable elements, which will vary with the application.
- For example, if your signage is intended for a specific brand you should focus on the sales of that brand. The increase is positive ROI.
- In test markets researchers compare stores that do not employ digital signage with those that do. The delta is the improvement observed in one controlled test over the other.
- The situation is similar when the signage is meant to produce a call to action. For instance, when the sign prompts a customer to participate in a survey or join a customer appreciation program.
- The measureable return would be based on the number of viewers who follow through with the call to action.



 DSCE Digital Signage Certified Expert

47

Tangible VS. Intangible Benefits

Business, ROI, and ROO

- The use of digital signage, to inform or entertain, is to improve satisfaction and the experience. This is more difficult to measure.
- For example, a doctor's waiting room, with digital signage installed, facilitating a more pleasant patient experience while waiting to be seen. The visit is thus "better" with perceived wait time reduced.
- This may sound unimportant, but improved experiences and reduced perceived wait time can influence behavior, and thus repeat business.
- This poses the question; how do you measure the ROI in this instance?
- Customer experiences are intangible, but they can still be measured, with customer surveys, focus groups, phone calls, etc.
- Repeat business is perhaps the best measurement that can be tracked.
- This gives us a quantifiable measurement, even though we are not basing it directly on dollars in a cash register.

 DSCE Digital Signage Certified Expert

48

Measuring Return

Business, ROI, and ROO

- What are some of the proven results of digital signage installations?
- The contribution of digital signage is to strongly influence the way that a consumer experiences and is stimulated by the product, service or information being displayed, and the environment in which it is presented.
- While actual results vary by application and project, the following are performance benchmarks representing measures of impact that have been achieved.
 - **30% to 1500%+ Sales lift**
 - >10% Increase in shopping basket dollar amount
 - >70%+ Unaided recall
 - >70% response on call to action or purchase Intent
 - 80% Improved experience
 - 50% Reduce perceived wait times
- It is important to note that positive results are the norm today as digital signage has proven to contribute to the viewer experience and an improvement to the bottom line of most companies that deploy systems.



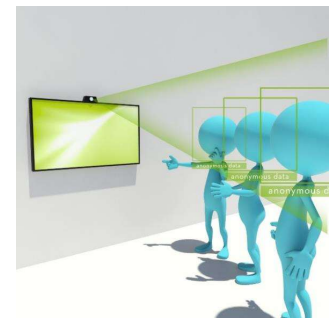
 **DSCE** Digital Signage Certified Expert

49

Measuring Return

Business, ROI, and ROO

- A major factor in measuring ROI, is analytics and tracking.
- Metrics for digital signage has always been difficult, but new technologies are offering ways to apply numbers to the viewers.
- **Anonymous Video Analytics offers a way to examine several factors about who is watching the digital signs, and for how long.**
- **AVA uses a camera to examine the people who are passing in front of the digital signage display.**
- It provides data which extrapolates and reports information about the viewer:
 - Eye contact with the sign and zones
 - Traffic flow and dwell time
 - Demographics of age, race, gender
- This information allows the deployment of targeted advertising or information focused on the kinds of viewers present at any given moment.



 **DSCE** Digital Signage Certified Expert

50

Mastering Revenue

Business, ROI, and ROO

- **Understand, the costs of digital signage are as unique, and real, as the revenues.**
- The most obvious is the startup cost itself. The initial investment in hardware carries many questions; How many and what kind of displays will be used? What will they cost to install? What is the infrastructure? Etc.
- Software poses its own set of questions. Do you buy on premise or subscribe as a service? What features does the software need to have? What kind of content files will it use?
- Regarding content, a whole host of issues are often neglected: Most importantly, what content will the signs use, and where will it come from and how often will it need to be refreshed?
- All these issues must be decided before any digital sign can be seen by a viewer.



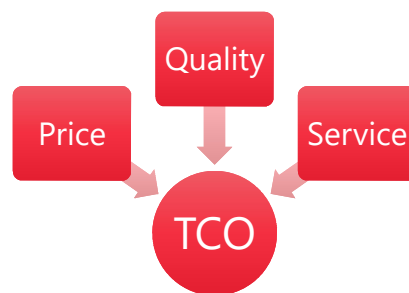
 **DSCE** Digital Signage Certified Expert

51

Mastering Revenue

Business, ROI, and ROO

- We're not done, there is total cost of ownership (TCO) to consider!
- **Even after the system is installed, and operational, there are continuing costs to deal with.**
- Content will need to be updated. Hardware and software will need to be maintained. Network and bandwidth costs will be incurred. Administrative personnel will have wages to be paid.
- All these issues show why it is critical to understand the financial concerns before any digital signage project ever leaves the drawing board.
- **The owners must establish the minimum revenue they hope to receive from the system, and what is the maximum cost they are willing to incur.**



 **DSCE** Digital Signage Certified Expert

52

Digital Signage Business Models

Business, ROI, and ROO

- Digital signage offers several ways that ROI/ROO can be delivered.
- The business models that can be used as the basis of a digital signage system revolve around the core concepts of the objectives of the network, where the content will come from, and who will provide funding to create and operate the system.



 **DSCE** Digital Signage Certified Expert

53

Closed System Model

Business, ROI, and ROO

- The first model is the "closed system" digital signage network.
- This operates on the idea that a venue will fund the entire digital signage network, bearing the expense to design, purchase, install, and operate the system.
- The content that will be played on this system will be entirely generated and managed by the owner, displaying content that is exclusively beneficial to them.
- This model carries the highest initial expenditures and will front load the cost of the system.
- However, it offers the maximum control over the content, and if deployed correctly in certain situations, such as a retail establishment, can deliver higher ROI and ROO.



 **DSCE** Digital Signage Certified Expert

54

Ad Based System Model

Business, ROI, and ROO

- The second, and most common business model in digital signage, is the advertising driven model.
- In an ad-based system, the real estate, and initial startup costs are borne by the system owner.
- The system owner then seeks out advertising revenue, to defray the initial expenses, provide positive ROI, and help reduce operating costs.
- In this type of system, the content displayed will generally consist of not only third-party ads, with no thought of benefit to the venue, but targeted ads interspersed with venue advertising and information.



 DSCE Digital Signage Certified Expert

55

Informational System Model

Business, ROI, and ROO

- The final model in digital signage, is an informational system.
- This model does not revolve around advertising revenue but providing other types of benefits.
- This kind of signage will provide information and entertainment, not ad playback.
- This system does not truly provide ROI, but really provides ROO, or Return on Objectives.
- A good example of this sort of system would be corporate digital signage, deployed throughout to deliver information about events, company policy, and to welcome and entertain visitors.



 DSCE Digital Signage Certified Expert

56

Understanding Content



57

Content as the Vehicle

Understanding Content

- Often you hear that content is king but that is not 100% accurate.
- Content is the crown prince, but not the king.
- **The king is business and the articulation of the objectives.**
- Content **is** the "vehicle" that carries the objectives to fruition.
- Digital signage is all around us and content has become ubiquitous.
- So... content abounds but good and effective content does not.
- One size does not fit all... but simple, straightforward copy and a strong call-to-action makes the difference between content that converts from inaction to action and one that doesn't.



 DSCE Digital Signage Certified Expert

58

Content Defined

Understanding Content

- "Content" describes the images, messages and video, graphics and audio presented on digital signage displays.
- Content must deliver benefits and results to the network operator, location provider, and content provider.
- **Content is the visual manifestation of a message, brand, and business objective or offering.**
- Network owners, operators, and advertisers must understand that digital signage has unique characteristics and differs substantially from other communication devices.
- Digital signage will have a direct impact on branding, and has the potential for de-branding, depending upon the relevance and composition of the content displayed.
- **Content is directly responsible for delivering the benefits that digital signage promises.**



 **DSCE** Digital Signage Certified Expert

59

Content Call-to-Action

Understanding Content

- For digital signage content to be effective, it normally requires a persistent call-to-action whether in the form of a command, declarative statement, or a mere suggestion.
- By asking a viewer to do a task that they can complete immediately (or at least very soon), there's a much greater chance that they'll do it.
- Likewise, easier tasks are more likely to get completed than more challenging ones.
- **Digital signage content without a call-to-action is simply a form of entertainment!**



 **DSCE** Digital Signage Certified Expert

60

It's Not About Content...

Understanding Content

- As much as we would like clear cut rules, and formulas for the creation of content, there are no absolute rules for content, and basically nobody truly understands all the consequences of content relative to the various digital signage applications.

Content therefore must be relevant to both the objectives and to the viewer!



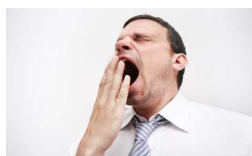
 **DSCE** Digital Signage Certified Expert

61

Content is not Neutral

Understanding Content

- By design, content is not neutral. Its either positive or negative. It is intended to be positive in brand or image building by improving the viewer's perception, but it can be negative.
- Viewers can develop a negative response to a network that may have previously produced a positive impact. Uninspiring, repetitive, or ineffectual content is the culprit.
- **It is a necessity to keep content relevant, useful, interesting, compelling and inspiring. In not doing so, everyone involved with the digital signage equation, runs the risk of alienating, disappointing and producing a negative viewer impact.**
- This de-branding can be directed toward individual products or services, the location provider or the digital signage system at large.



 **DSCE** Digital Signage Certified Expert

62

Content is not Neutral

Understanding Content

- Content must **earn** viewer acceptance.
- Failure to gain acceptance results in content being disregarded or worse yet, a negative impact.
- **Network operators are now realizing that inadequate content is a make-or-break proposition.**
- Many networks are dying on the vine or stalled in use due to the inadequacy of their content.
- Technology elements are delivering on the visual promise of digital signage, but when content is the weak link in the chain, the network underperforms, stalls in deployment, and the relevance of the entire network and its overall business strategy are cast in doubt.



 **DSCE** Digital Signage Certified Expert

63

Content is not Neutral

Understanding Content

- The "death knell" of a network due to poor content:
 - **Objectives are not met.**
 - Reduced awareness of the displays by the viewers.
 - Content perceived as annoying or in conflict with the environment.
 - Content is not relevant to the viewer as intended.
 - Content perceived as repetitive.
 - Individual items shown too frequently.
 - Playlist is made up of **too much** content.
 - Displays presenting broadcast TV or stock content.
 - **Content is uninteresting.**



 **DSCE** Digital Signage Certified Expert

64

5 Key Elements of Good Content

Understanding Content

- **Relevance** — It is critical to create content that is relevant to the viewer, not only at the point of viewing, but also to their lives outside of the viewing environment. The objective is to keep the viewers engaged, so they will receive, retain, and recall the intended message.
- **Placement** — It is critical to place signage in a location and position it is natural for the viewer to gravitate to. Audio placement is also very important to draw attention to the sign at the right time. The best placement for signs can be identified through traffic flow observations. The viewer did not come to this location to watch TV, they came with a purpose in mind, and the goal is to expose them to the messages on the displays.
- **Refresh rate** — Repetitive content will be eventually ignored and cause the viewer to ignore the digital signage network. Planning the duration and variation inside a playlist and creating content items of the correct length for the flow of traffic are major considerations. To prevent loss of credibility, its also important to ensure that time-based information, such as weather and news, stays current.

 **DSCE** Digital Signage Certified Expert

65

5 Key Elements

Understanding Content

- **Audiovisual stimulation** — Grabbing the initial attention of a viewer is challenging. People are out of their homes, with a purpose, and a goal to achieve. Your goal is to get them to stop and watch the content and message you are providing. Creating content that is colorful and entertaining can help grab the customers attention, when carefully positioned in the playlist. Introducing motion on screen and changing audio levels are effective ways to grab attention.
- **Engagement** — Developing content that can engage the viewer is one of the most important aspects of digital signage. The viewer is used to watching TV in a home environment, engaged in the entertainment, controlling what they see. Now place that viewer in an environment where the digital sign has a message to convey. How do you engage their attention, and get the viewer to watch the display? Innovative content development is the answer.

 **DSCE** Digital Signage Certified Expert

66

Guidelines for Content Creation

Understanding Content

- Most digital signage resides in environments full of people in motion. Viewers are typically in transit, waiting in line, or involved in a primary activity such as shopping, eating, working, or studying.
- Different categories of viewers need different types of content.
- **Digital signage content is most effective presenting clear, short, messages with graphics and motion. The best content presents basic information in an engaging manner and asks for direct action from the viewer.**



 **DSCE** Digital Signage Certified Expert

67

The Content Equation

Understanding Content

- The Content Development Life Cycle or "creation equation" is as follows: "Content elements" applied to "objectives" in a "viewer's environment" with a "call to action" achieve "Response".

Content must be created to suit the objectives, viewer environment, and other unique capabilities of digital signage, if benefits are to be fully realized. This usually involves more than a technical reformatting of media.



 **DSCE** Digital Signage Certified Expert

68

Experts Advise on Content

Understanding Content

- Digital signage "spots" are most effective to the casual viewer when they are approximately three to eight seconds long including message entry and exit.
- Yes, there are exceptions to the rule where spots can be longer.
- The duration of a spot should relate to the viewer dwell time and the overall playlist time.
You do not want to have a 20 second message and try to deliver it in less than 10... Something will be left out!
- A complete spot should be easily viewed during a single viewing session, with multiple spots typically being presented in the same viewing episode.
- **As with other media, digital signage spots become stale after having been viewed seven times.**
- Fortunately, a digital signage spot can be recomposed in variations of the same message with minimal effort.



 **DSCE** Digital Signage Certified Expert

69

Experts Advise on Content

Understanding Content

- The text needs to be an easily readable font and size in good color and contrast on its background.
- It should state the subject, value proposition and the "call to action," i.e., the message can direct viewers to an internet site, telephone number, print publication or a location.
- Graphics may be a logo, brand name, product or visuals of the typical or targeted user, a usage scenario, benefits expected, comparisons to an alternative, etc.
- Motion can be achieved by moving the text or graphics such as a transition, zoom in or out, shifting display location on the screen, slight "jiggling" or "togglng" images to produce a flashing or blinking effect. Video or flash animations can be used effectively in digital signage spots.

Odd font choices **CAN MAKE** *things hard to read!*

 **DSCE** Digital Signage Certified Expert

70

Experts Advise on Content

Understanding Content

- **Where to Get Ideas:**
 - Posters and yes, static signage
 - Social media
 - PowerPoints
 - Websites
 - TV and video
 - Magazines
 - Newspapers and circulars
 - Trade shows and events



 **DSCE** Digital Signage Certified Expert

71

Standards of Practice

Understanding Content

- The American Association of Advertising Agencies has published advertising standards of practice which direct that no advertising should contain:
 - Infringement on legal rights (including copyrights, rights of privacy and publicity)
 - False or misleading statements or exaggerations, visual or verbal
 - Price claims which are misleading
 - Comparisons which unfairly disparage a competitive product or service
 - Claims insufficiently supported, or which distort the true meaning of practicable application of statements made by professional or scientific authority
 - Statements, suggestions or pictures offensive to public decency
 - Defamation or libel



 **DSCE** Digital Signage Certified Expert

72

Improving Design

Understanding Content

- A good way to improve digital signage content design and composition skills is to look at digital signage content spots and gauge the ways that you are affected.
- Be the judge by asking yourself the following while considering the viewing environment:
 - What would make the intended message clearer or easier to ingest or "take in?"
 - What was good about it?
 - Was the value proposition clear?
 - Was the requested action clearly presented and compelling?
 - What was a distraction or not essential to the message?
 - What would you change to simplify or empower the message?



 **DSCE** Digital Signage Certified Expert

73

Content Examples

Understanding Content

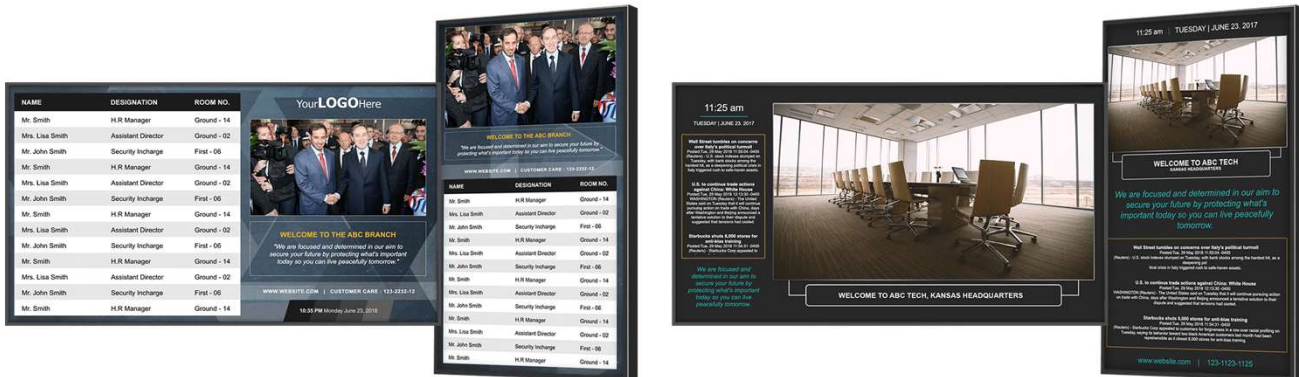
- The following screenshots are examples of digital signage content templates courtesy of NoviSign.
- These images illustrate some effective content design techniques, and examples you may encounter when designing a digital signage template.
- The screenshots in the following slides will show the use of several elements in content design:
 - Zones
 - Text
 - Video playback
 - Graphics and animated slideshows
 - Scrolling "live" feeds of financial, sports, and weather information
- Content is all about being creative and these examples are by no means comprehensive.
- There are hundreds of digital signage software packages available, and each one handles content and design differently, offering a large array of different ways to lay out, and provide content, on screen.

 **DSCE** Digital Signage Certified Expert

74

Corporate Content

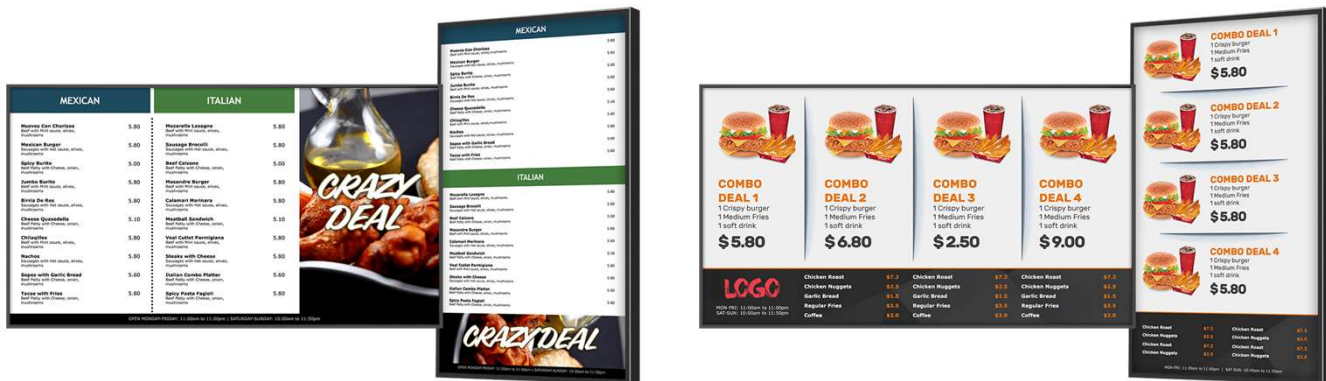
Understanding Content



DSCE Digital Signage Certified Expert

QSR Content

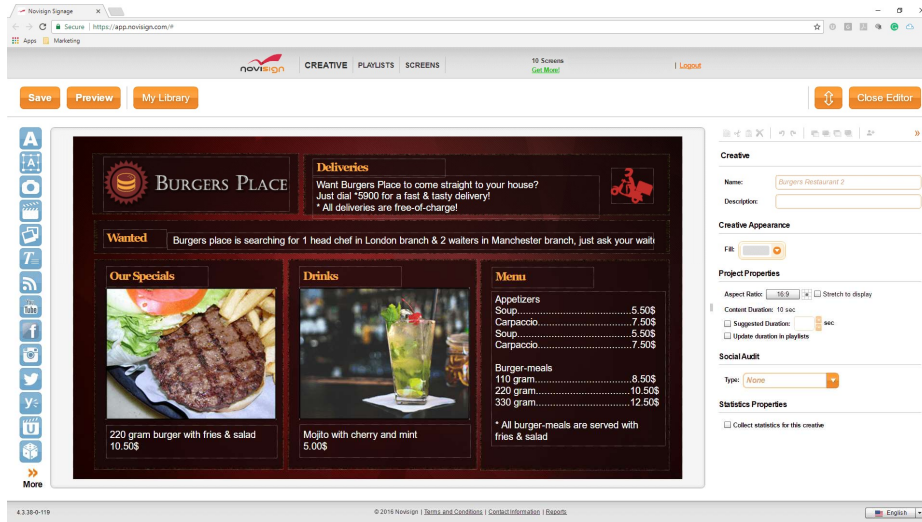
Understanding Content



DSCE Digital Signage Certified Expert

Content Software

Understanding Content



DSCE Digital Signage Certified Expert

Menu Board Content

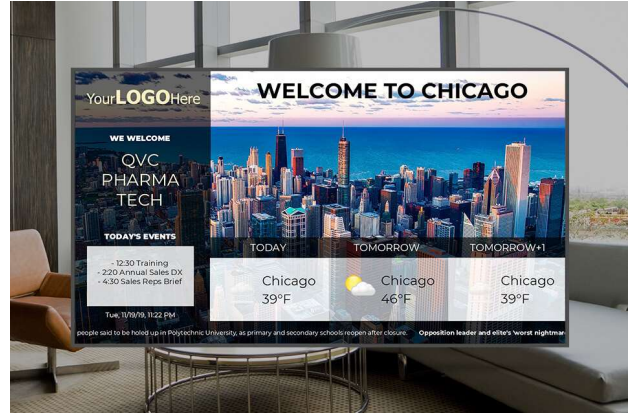
Understanding Content



DSCE Digital Signage Certified Expert

Education and Lobby Content

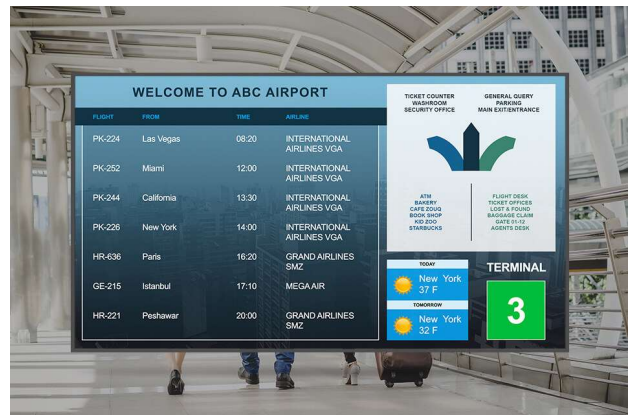
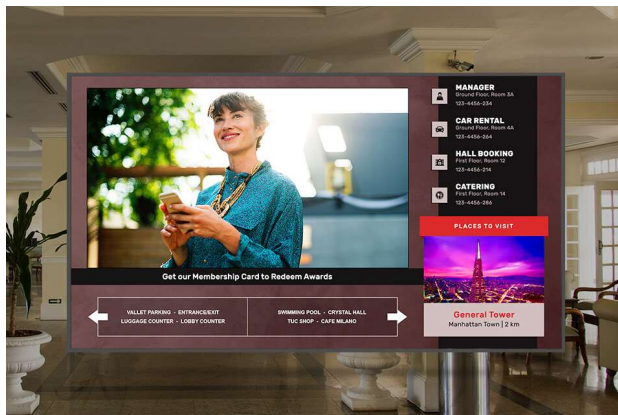
Understanding Content



DSCE Digital Signage Certified Expert

Hospitality and Transit Content

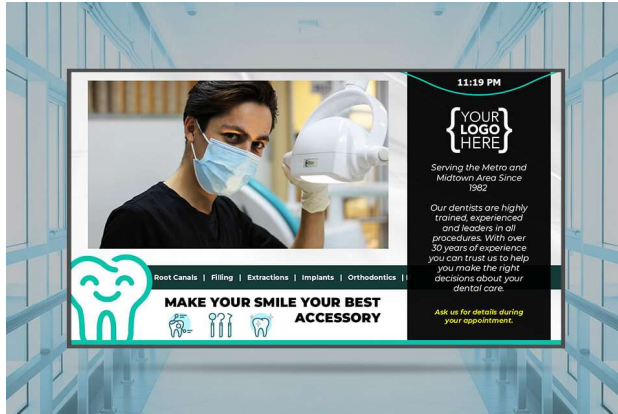
Understanding Content



DSCE Digital Signage Certified Expert

Healthcare, Recognition, and Social Media

Understanding Content



 DSCE Digital Signage Certified Expert

Designing a Digital Signage System

 DSCE
Digital Signage Certified Expert

Understanding the Needs Analysis Process

Designing a Digital Signage System

- No matter the size of the system size, a cohesive and inclusive design is of great importance.
- If the system is not designed through a careful needs analysis, it won't reach its full potential, and end up costing more than it should.
- Several factors need to be considered when performing a needs analysis and they follow a deceptively simple process.
- The design process is applying the resulting information of the need's analysis to the hardware and software selection.
- The ultimate design criteria, in the end user's mind is to realize their objectives and true ROI and ROO.



 DSCE Digital Signage Certified Expert

83

The Importance of the Objectives in Design

Designing a Digital Signage System

- The concept of digital signage is around delivering a message more effectively than a static sign.
- It is imperative to understand what you want the digital signage system to accomplish, who will view it and how it will be judged and evaluated upon completion.
- Next is understanding content. You need to know the kinds of content to be displayed, but as importantly, the intent of **each section of that content**.
- If you don't know the true objective of the system and the type of content that will be displayed on it and ultimately who the intended viewers are, you cannot design an effective digital signage network.

The objectives and ROI are inexorably linked.

 DSCE Digital Signage Certified Expert

84

Needs Analysis - Real Estate

Designing a Digital Signage System

- Where are the sites located? Is it a single building or several, across the region, state, or nationwide?
- What kind of environment are the displays going to be installed in?
- Where on the site will the displays be installed to gain the most viewers?
- What distance away is the viewer intended to be from the display? This concept is key in selecting the size and type of the display.
- How many displays will be installed in a single location?
- What structure is available for mounting displays?
- Real estate impacts network design and software selection capable of handling the number of locations.
- **The answers to these questions will direct your physical design and any extra precautions you may need to take to accommodate environmental and security concerns.**



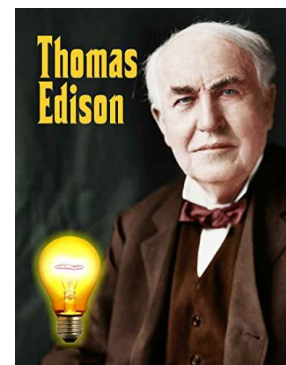
 **DSCE** Digital Signage Certified Expert

85

Needs Analysis - Environment

Designing a Digital Signage System

- Ambient Light
 - The ambient light in the location plays a key role in selecting the type of technology that will be used, but also the specific model of display device.
 - High ambient light can impede the message on the display.
 - A display must be capable of overcoming that ambient light.
 - The goal is to attract the viewer's eye with a display that has more brightness than the ambient light shining on it.
 - Glare should also be a consideration. LCD screens can produce glare that interferes with the viewing of the screen. Anti glare coatings, or non-glare displays may need to be used to solve this issue.



 **DSCE** Digital Signage Certified Expert

86

Needs Analysis - Environment

Designing a Digital Signage System

- Temperature
 - Temperature must be considered when selecting the location where a display will be installed, whether indoor or outdoor.
 - Heat is "killer" of both displays, and computers. Any digital signage installation must provide enough ventilation to prevent both the display and the player PC from overheating.
 - This is not a concern when the display is being installed in a climate-controlled space but take care to consider airflow when the display and player are in an enclosed area, like a custom enclosure.
 - In addition, when looking at installations outdoors, or in an area with a very low or high temperatures, a heating or A/C source may be needed to keep the system running smoothly.
 - Displays that literally freeze or overheat generally won't work well when they thaw out.



 DSCE Digital Signage Certified Expert

87

Needs Analysis - Environment

Designing a Digital Signage System

- Moisture
 - Moisture is another evil to consider.
 - Most digital signage components don't offer any protection against moisture and may need a moisture proof or resistant enclosure to be installed where there is high moisture.
 - This is of critical concern when dealing with outdoor signage but also can be a concern in high humidity areas indoors.
 - When evaluating system components, it is helpful to note that commercial grade components will typically come with rating ranges for heat and moisture tolerance.
 - Also, there are standards, such as ingress protection (IP ratings), for dust and moisture that will help in selecting a device for hazardous environments.



 DSCE Digital Signage Certified Expert

88

Needs Analysis - Environment

Designing a Digital Signage System

- Theft
 - Theft is a factor that frightens prospective digital signage network owners.
 - After all, we are placing rather expensive and delicate displays into a public venue, where they can be stolen, damaged, or tampered with. This isn't exactly a pleasant prospect.
 - It is important, when selecting a mounting solution for the display, that you select one that is secure.
 - It needs to have a solid latching system to attach the display, that locks, and is not easily broken.
 - The system should be assembled with tamper resistant screws, and should be mounted securely to the structure, so that potential thieves don't cart off the display, with the mount still attached!



 DSCE Digital Signage Certified Expert

89

Needs Analysis - Environment

Designing a Digital Signage System

- Vandalism, Tampering
 - Vandalism is another key issue to consider.
 - Graffiti may be sprayed onto the display, or even scratched into its surface. The screen could be broken, or speakers torn off.
 - A vandal resistant enclosure may be a sound investment.
 - Physical vandalism is not the only way digital signage may be damaged.
 - Content tampering is something that must be considered. Unauthorized access to the display's PC and software can allow undesirable content being displayed.
 - Tampering in this manner can be either through the network/internet, or through physical access to the PC. Computer security is a must and keeping the PC and media players away from public access is required.



 DSCE Digital Signage Certified Expert

90

Needs Analysis - Networks

Designing a Digital Signage System

- Now that we have a good idea of the type of system and location, it is time to look at how the proposed hardware is going to communicate with each other.
- The network is the means to distribute content, so careful design is rather important.
- The locations of the digital signs, will give you a good idea what kind of network you will need.
- With a single screen there are fewer issues to consider. But for multiple site installations, it becomes more complex.
 - Is there an existing network?
 - How are all the screens going to communicate?
 - Are we going to use wired or wireless within the site itself?
 - How will Internet access work?
 - Cable/DSL or cellular?
 - Are there on site IT people to support this?



 **DSCE** Digital Signage Certified Expert

91

KISS Needs Analysis: 15 Questions to Ask

Designing a Digital Signage System

- A basic digital signage needs analysis, should entail brief but specific answers to the following questions.
 - **This may be titled "Digital Signage for Dummies", where you get enough information to do the job, and enough knowledge to be smart enough to seek more.**
1. What is the objective and purpose of the digital signage system/network?
 2. How will "success" be measured and by whom?
 3. How many locations / screens are involved?
 4. What is the environment in which the screens will reside and at what distance viewed?
 5. How many hours per day will the system be operable?
 6. Will the system include interactivity?
 7. Will the system include mobile devices?



 **DSCE** Digital Signage Certified Expert

92

KISS Needs Analysis: 15 Questions to Ask

Designing a Digital Signage System

8. Regarding the network, will it be:
 - Wired
 - Wireless
 - Cellular
 - Provided, or need to be built?
9. Regarding digital signage software, will it be:
 - Software as a Service or SaaS
 - On-premise (on prem) software
 - Bundled with a media player or display
 - Content creation inside or outside software package
 - Requiring reporting functions



 **DSCE** Digital Signage Certified Expert

93

KISS Needs Analysis: 15 Questions to Ask

Designing a Digital Signage System

10. Will the system be used for adverting or information or combination of the two?
11. What types of content will be required?
 - Advertising
 - News, financial, or sports "feeds"
 - Animations with or without audio clips
 - MS Office files/images
 - Still images i.e., JPEG, PNG
 - Live database integration
 - Emergency notifications
12. Will the same content be on multiple screens?
13. Who will supply the content?
14. How will the content be played back?
15. Where will the media player be located?



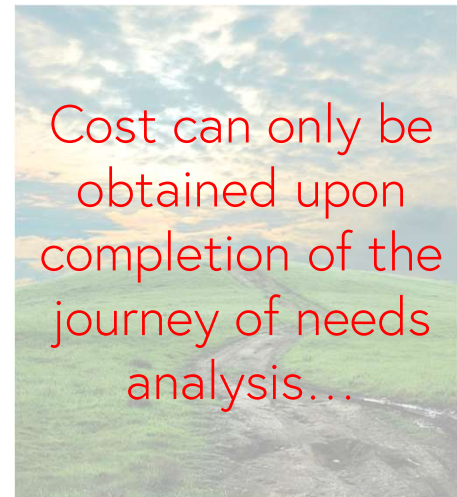
 **DSCE** Digital Signage Certified Expert

94

It All Depends!

Designing a Digital Signage System

- These questions distill down to a single question for the end user; What does it cost?
- There is no standard answer to this question, no matter how badly we wish there was.
- Because of the variables of digital signage, it is nearly impossible to predict exactly what the system will cost **before** completely understanding what it will end up being.
- Beware of the "estimated price" before the entire system is understood, designed, and approved.
- We must understand that there is a significant difference between price and cost.



 **DSCE** Digital Signage Certified Expert

95

Digital Signage Design 101

Designing a Digital Signage System

- The fundamentals of effective digital signage system design are:
 - Understand the digital signage objectives thoroughly!
 - Understand the end user motivation related to ROI / ROO for the project
 - Perform an effective and complete needs analyses
 - Understand the advantages of partnering and outsourcing
 - Know the importance and contribution of content
 - Select software relative to the application
 - Ensure a secure network design and configuration
 - Select the right displays, mounts and players
 - Have a project management plan and prepare for integration
 - Prepare proper documentation
 - Provide for training and service after the sale



 **DSCE** Digital Signage Certified Expert

96

Digital Signage Software



97

Digital Signage Software Defined

Digital Signage Software

- There are hundreds of companies currently selling generic digital signage software, with more that provide application specific products.
- This means one of the most important choices to make is which software vendor to partner with.
- If you are dealing with small networks of a few screens, selection of software is much simpler. Just choose whatever appeals to you relative to the user interface. However, larger, multiple screen rollouts require more careful consideration.
- We will work on the assumption that all the platforms we consider will perform the basics of distributing content over a network and playing it back in some form.



98

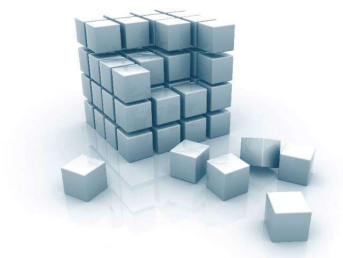
 DSCE Digital Signage Certified Expert

98

Digital Signage Software Defined

Digital Signage Software

- Digital signage software packages are usually made up of a group of components, each designed to perform different tasks.
- These components will create the software engine that drives your digital signage network. Vendors may call these parts by different names, but let's look at the basic components, and what they do.



 DSCE Digital Signage Certified Expert

99

Digital Signage Software Defined

Digital Signage Software

- Player
 - The player software is the component that resides on the media player and will drive the video being sent to the display device.
 - The player receives data from the server, containing the content to be shown, and the schedule information of when to show it.
 - Players will also report back to the server about the system status, and if the system is operating normally.
 - **Some software packages support what is known as playback reporting, meaning the player software will provide the server with a report of what has played, when, and for how long.**
 - Some player components will also control the display via RS232 to allow for automatic power and volume control.



 DSCE Digital Signage Certified Expert

100

Digital Signage Software Defined

Digital Signage Software

- Server
 - The server component of the signage software package handles scheduling the distribution of media to the player software.
 - The most common type of server software controls the networked or internet enabled player software, with the user interacting with the server directly, through a graphical interface.
 - The server software will allow the user to import content into the system, create schedules, manage the screens, and publish data to the network.
 - Another type of server system may relocate the user interaction to an entirely separate software component, for management and scheduling. This means the server will accept incoming schedule information and content from the workstation software and distribute it to the appropriate screens.



 **DSCE** Digital Signage Certified Expert

101

Digital Signage Software Defined

Digital Signage Software

- Management and Scheduling
 - Some software packages may have separate scheduling and player management components, that are not integrated into the server software.
 - This simply means that those functions exist in a separate application, and will connect to the server via a network, or the internet, allowing flexibility in having multiple people interact with the system.
 - This software will import content and create the schedule, which can then be uploaded into the server, for distribution to the player software.
 - **Some packages will also include the ability to monitor screen health through the management software, and may have playback reporting integrated here, as well.**



 **DSCE** Digital Signage Certified Expert

102

Digital Signage Software Defined

Digital Signage Software

- Content Creation
 - Content creation is a key aspect of the digital signage software. There are two basic models that the signage software packages may operate on.
 - **The first model allows the user to work with standard content types and import them into the signage software. The user would create their content in a separate application, utilizing files like AVI or MPEG video, HTML, standard graphics such as JPEGs and PNGs, PowerPoint files, etc.**
 - The signage software package offers some tools to create screen layouts for these files, that then upload that information to the server, as directed by the scheduling component.
 - **The second model for content creation, is entirely integrated tools, that require the user to design, and create, all content within the software package itself.**

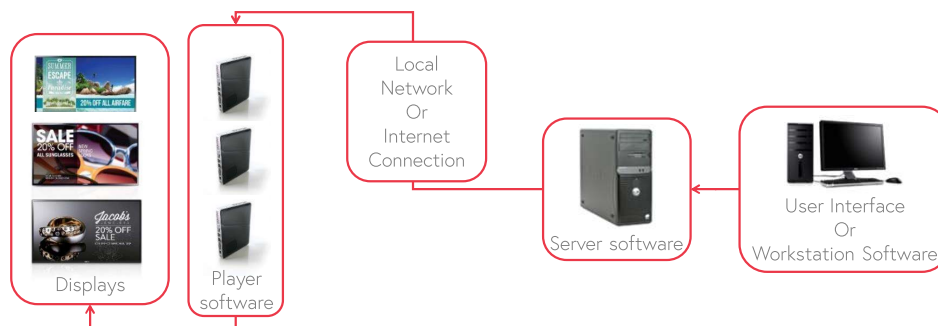


 **DSCE** Digital Signage Certified Expert

Software System Models

Digital Signage Software

- **On Premise, sometimes abbreviated as "on-prem"**, operates under the concept that the end user is going to purchase the software up front, and host it themselves within their corporate network environment.



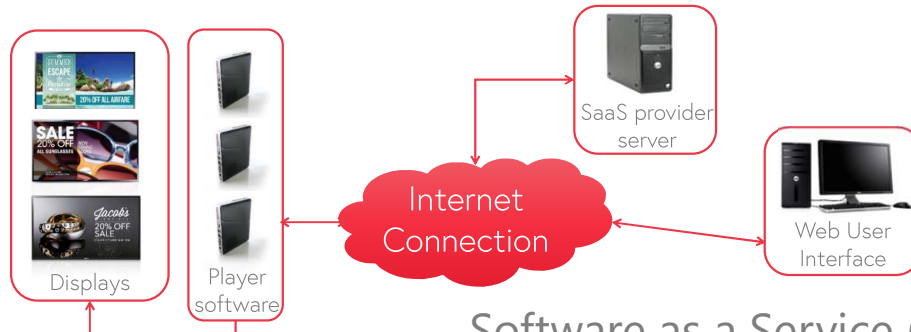
On Premise Software System

 **DSCE** Digital Signage Certified Expert

Software System Models

Digital Signage Software

- **Software as a Service, abbreviated as "SaaS"**, operates under a subscription model. The end user has little to no out-of-pocket expense in setting up the software but pays a per display / per month subscription fee to the software provider. The software provider then hosts the server software and offers use as a service. This is sometimes also referred to as "cloud" software.



Software as a Service (SaaS)

 **DSCE** Digital Signage Certified Expert

105

Selecting the Right Software

Digital Signage Software

- **Avoid published reports, ratings and rankings lists**
 - Reports, ratings and ranking lists most often are colored by sponsors, partners, and personal bias falling under the "pay to play" scenario.
- **Track records count**
 - How long has the company been in business? How large is the installed base and what is its makeup?
- **References speak volumes**
 - You need to speak directly to satisfied clients with like needs to your own.
- **Live together first**
 - Evaluation samples or licenses are a must. Use the platform, learn it, and think about how it works in the real world... your world.



 **DSCE** Digital Signage Certified Expert

106

Selecting the Right Software

Digital Signage Software

- **Test the service support**
 - Ask for help and support on an issue even if you do not really have a problem. You will discover firsthand the level and quality of their support.
- **Is it secure?**
 - Security is one of the hot button issues surrounding any PC installation, especially within digital signage. Be aware of how the playback software handles security.
- **What is included?**
 - A common phrase is "turnkey solution". Exactly what does this include and what "other fees" are charged.
- **Look beyond the glitz and glamour**
 - While a graphically attractive GUI is a plus, it can mask underlying weaknesses. There must be a stable platform especially in the playback engine.



 **DSCE** Digital Signage Certified Expert

107

Selecting the Right Software

Digital Signage Software

- **One size does NOT fit all?**
 - Most software vendors handle the basics but if you have a specialized application, you are better off with a vendor who is experienced in the niche and has a development roadmap focused on that.
- **Outside the box**
 - Look at how it handles additional features you may wish to add. Open architecture provides an "out" and a fallback position.
- **What in store for the future?**
 - More importantly than ever, is there a realistic software developmental roadmap?



 **DSCE** Digital Signage Certified Expert

108

Selecting the Right Software

Digital Signage Software

- **Who is on the team?**
 - Today you can fool people into thinking you are bigger than you are in a business sense. So, check out the staff and what they do. Your project may depend on them.
- **What's in a release?**
 - How is the product developed, tested and released. Are there beta test releases and what is the timing?
- **Reduce service calls!**
 - Service calls are expensive so look for software that can recover itself and handle restarting the system from a crash, with no user interaction.



The only constant is change do your research, create a plan and keep an open mind about what may be coming.

 **DSCE** Digital Signage Certified Expert

109

Understanding
Digital Signage Hardware

 **DSCE**
Digital Signage Certified Expert

110

Understanding Digital Signage Hardware

Understanding Digital Signage Hardware

- A digital signage system appears like a complex web of different components, but it essentially distills down into a relatively simple definition:
- A digital signage system is a network of computers or similar appliances like media players, joined together in a local network or across the Internet, running digital signage software, that are connected to displays.
- This means that no matter who the manufacturer of each component is, or how large the digital signage system is, it will contain several common parts.

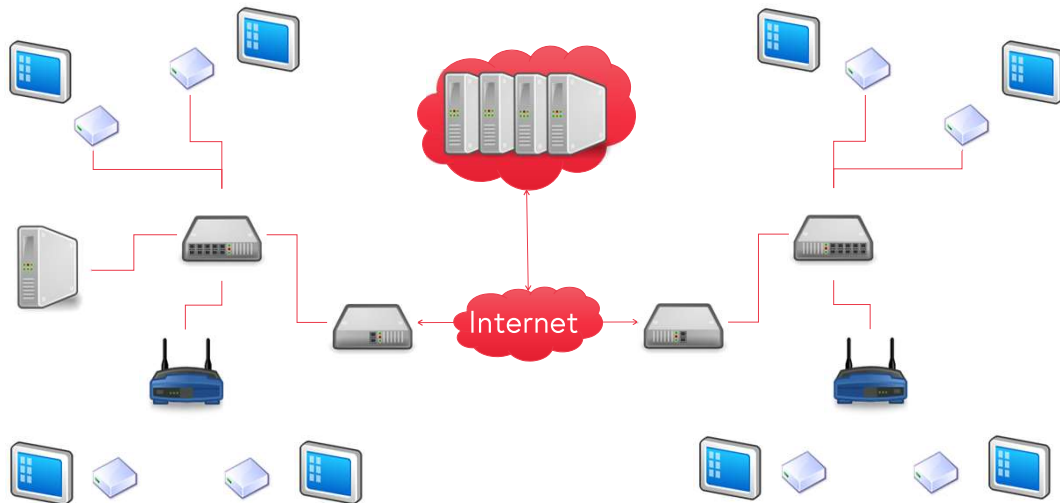


 DSCE Digital Signage Certified Expert

111

Example of a Digital Signage System

Understanding Digital Signage Hardware

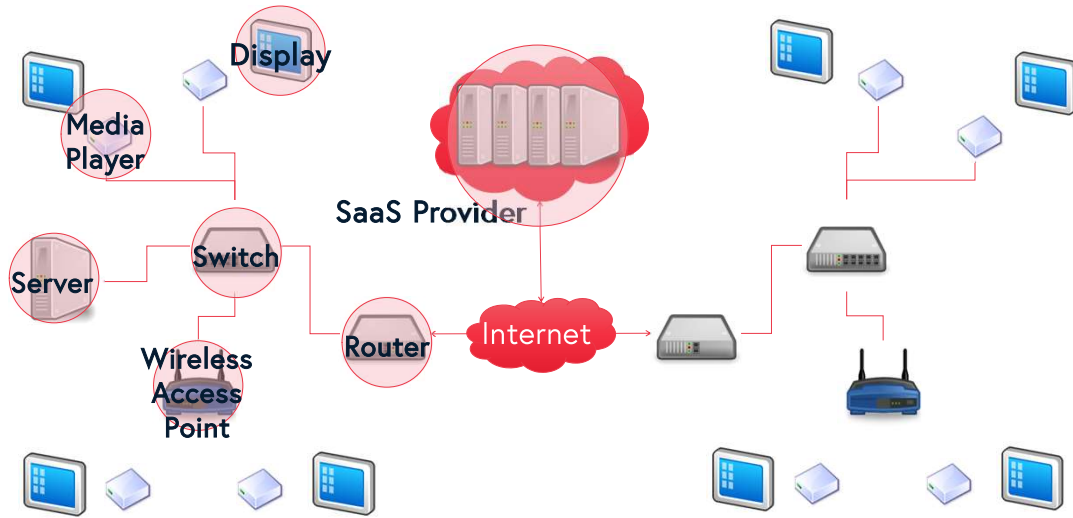


 DSCE Digital Signage Certified Expert

112

Example of a Digital Signage System

Understanding Digital Signage Hardware



DSCE Digital Signage Certified Expert

Digital Signage Displays



Displays in Digital Signage

Digital Signage Displays

- No matter what else goes into a digital signage system, without a display, we have no way of conveying our message!
- Displays come in several different technologies, each with its own benefits and limitations.
- Sizes can range from a couple inches across, to many feet!
- Most digital signage installations are made up of flat panels, but...
- Approximately 20% of digital signage installations still use projection displays.
- Many outdoor displays are direct view LED based, although outdoor class LCD flat panels are commonly available for smaller applications.



 **DSCE** Digital Signage Certified Expert

115

Display Selection: Ready – Set - Stop

Digital Signage Displays

- Before we begin to delve into the technical analysis of displays for a given application, we must start with a need's analysis, interacting with the customer to establish the parameters under which the selection will reside. We must explore the following:
 - **Objective/purpose** of the system and how the displays selected will meet those needs.
 - **Environment/space/orientation** of the room including size, shape, obstacles, and any impediments that might affect the system.
 - **Ambient light** in all cases may decrease the quality of the image. We need to examine where it comes from, quantify it, and see how we can control it.
 - **Audience/Viewer** size and position.
 - **Content** to be displayed in terms of type, legibility, and quality required.
 - **Service** of the display relates to accessibility, frequency/quantity, and availability of spare parts tied into mean time between failure (MTBF) estimates.
 - **TCO** relates to the cost of the display, serviceability, and how long the display is expected to last before replacement.

 **DSCE** Digital Signage Certified Expert

116

The Display in Digital Signage

Digital Signage Displays

- **LCD Flat Panel**

- Anywhere from 2" to nearly 100" in size
- Up to 4K UHD resolution (yes 8K is out there but.....)
- Standard models are for average brightness for indoor applications
- High brightness and outdoor grade models are available
- Thin bezels for video walls are available
- Thin profile, light weight
- Low power consumption / heat output
- 16/7/365 capable (for some models, 24/7 units available)
- Caveat: Possibility of image retention (In some models)



 **DSCE** Digital Signage Certified Expert

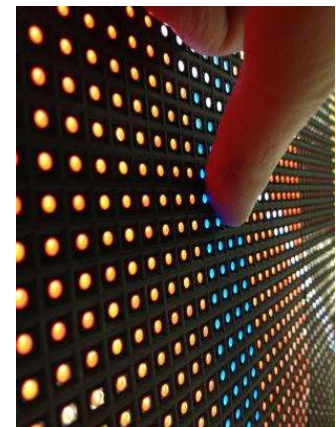
117

The Display in Digital Signage

Digital Signage Displays

- **Direct View LED**

- Indoor and outdoor variations
- Outdoor rated with Ingress Protection (IP)
- Fine pitch indoor is growing in acceptance
- Pixel pitch dictates viewing distances from approximately 1MM up to 16MM for long distance outdoor.
- High brightness (up to 10,000 nits) for sunlight applications
- Designed for viewing seamless applications at a longer distance
- Modular construction, tile-based design
- More complex installation, due to number of components
- Depending on size/pixel density, can be expensive to implement



 **DSCE** Digital Signage Certified Expert

118

The Display in Digital Signage

Digital Signage Displays

- **Projection - DLP, LCD, LCoS**
 - Can be an affordable way to make a very large image... if done correctly!
 - Requires a projection screen surface of some type
 - Can be negatively impacted due to ambient light
 - More complex installation due to larger number of variables
 - Lamp free projectors are available that can provide 20,000 hours of operating life
 - Lamps (and possibly dust filters) require replacement periodically unless an alternative light source projector is used



 **DSCE** Digital Signage Certified Expert

119

The Right Tool for the Job:
Consumer VS. Commercial

 **DSCE**
Digital Signage Certified Expert

120

Commercial VS. Consumer Displays

The Right Tool for the Job: Consumer VS. Commercial

- One of the big issues facing us today in the audiovisual industry is the seeming battle between the use of commercial and consumer displays.
- Consumer displays, in their current configurations are sleek, thin, and are designed with a sense of style that is quite compelling. In short, thin is in!
- In addition to the style issues of consumer displays, they are typically less expensive than a corresponding display size in a commercial model.
- **So, this begs the question, "Why can't I just use a less expensive consumer display, for my commercial application?"**
- **The correct answer is that it depends...**



 **DSCE** Digital Signage Certified Expert

121

Consumer Displays

The Right Tool for the Job: Consumer VS. Commercial

- Built to run a maximum of 8-10 hours per day, with limited cooling
- Focused on HDMI, limited availability of other input types
- Typically, no RS232 / IP control
 - If it is present, it is typically limited and unidirectional
- No IR and front panel lock out
- No availability of portrait mode
- No videowall capabilities
- No touch options
- No onboard digital signage capabilities
- Limited warranty, over the counter only
- **Void (or limited) warranty period in commercial installations**



 **DSCE** Digital Signage Certified Expert

122

Commercial Displays

The Right Tool for the Job: Consumer VS. Commercial

- More robust construction with better cooling for a longer MTBF (60K hours avg.)
- Built to run from 16/7 and up to 24/7 duty cycle
- Designed as monitors first, optimized for computer resolutions and video
- Expanded input panels with a wider variety of inputs
- Higher brightness backlights for flexible applications, outdoor capable products available
- Portrait mode capability
- Integrated digital signage platforms with built-in video wall processors
- Full RS232 / IP control
- IR and remote lock out
- Add-on touch overlays
- **3 to 5-year warranties on site**



 **DSCE** Digital Signage Certified Expert

123

Infrastructure

 **DSCE**
Digital Signage Certified Expert

124

Common Connectors and Signals

Infrastructure

- VGA
 - Analog computer video
- DVI
 - Digital computer video
- HDMI
 - Digital home theater and computer video
- DisplayPort
 - Digital video used on computers and some commercial displays
- RJ45
 - Connector for Category 5 cable used for signal extension / networks



 **DSCE** Digital Signage Certified Expert

Signal Distribution

Infrastructure

- Signal distribution is simply a method of transmitting a video signal over distance, or to multiple displays.
- Distribution may be necessary if the display and player components are going to be a considerable distance from one another, or if the player device is going to drive multiple displays.
- Category cabling has become a popular medium for long distance signal distribution.
- Selecting proper distribution equipment requires the same care and consideration as selecting cables and connectors, and can often make or break a system, in the same way. Saving money at this point is savings ill spent.



 **DSCE** Digital Signage Certified Expert

Signal Distribution

Infrastructure

- Distribution Amplifier (DA)
 - Distribution amplifier is a device that allows connection of one input source to multiple output destinations such as monitors or projectors.
- Switcher
 - A switcher is a device that allows a selection between more than one source, to a single output. In audio/video, switchers are a means of connecting an input source to an output device or a system.
- Matrix switcher
 - A matrix switcher is a means of selecting an input source and connecting it to one or more outputs. Like a regular switcher, but with multiple inputs and multiple outputs.



 **DSCE** Digital Signage Certified Expert

127

Signal Distribution

Infrastructure

- A balun is an impedance transformer that allows you to send a signal that requires a certain impedance value (such as 75 ohm for video) over a cable that has a different impedance (such as CAT5 that has 100-ohm impedance).
- You need one at each end, one to transform the original impedance to the impedance of the cable and the other to transform it back to the original impedance.
- A balun is the key component that allows you to transmit VGA, HDMI, DVI, DisplayPort, USB, control, or audio over Cat5.
- Category cable baluns can transmit up to 4K (3840 x 2160), over 300 feet of cable.
- Fiber optic baluns can run video much longer distances, but at a higher cost.



 **DSCE** Digital Signage Certified Expert

128

Mounts, Enclosures, Kiosks



129

Mounts

Mounts, Enclosures, Kiosks

130

- It is important to understand the specific requirements to ensure proper display placement, to maximize impact.
- Mounts need to be strong, functional, aesthetically pleasing, and easy-to-install.
- Products like multi-monitor TV mounts, ceiling mounts, and stands, are just a few of the solutions that assist in the visibility of digital displays.
- Always consider the weight of the display, and ensure that the mount, and the structure it is to be attached to, has enough capacity to safely hold the display.



 DSCE Digital Signage Certified Expert

130

Enclosures

Mounts, Enclosures, Kiosks

- Occasionally it is necessary to install a display into an area where the environment is hazardous to electronics, or damage may occur due to accident or vandalism.
- In these instances, a protective enclosure is needed to ensure the display is safe.
- Protective enclosures can take many forms. Some simply protect against vandalism and damage, where others are designed to be weatherproof, with heating and cooling appropriate to the task.
- You must consider the cost of these enclosures when considering such an installation; they can often cost several times more than the display they are meant to protect.



 DSCE Digital Signage Certified Expert

131

Kiosks

Mounts, Enclosures, Kiosks

- While digital signage typically employs large screens in common viewing areas, kiosks specialize in a one on one or one to few viewer experience.
- Kiosks typically include interactivity.
- Kiosks come in a range of designs for specific applications.



 DSCE Digital Signage Certified Expert

132

Digital Signage Media Players



133

What is a Media Player?

Digital Signage Media Players

- With so many media player types they all share a common function, regardless of who manufactured them, and what configuration they assume.
- A media player is a device that is connected to an IP (computer) network, that receives data from a digital signage software's server and processes that into a video signal to be shown by a display.
- All media players that exist will perform this basic function, even if built into the display.
- Regardless of what any manufacturer or solutions provider may tell you, any digital signage system you design, install, and activate must have a media player connected to the display in some fashion.

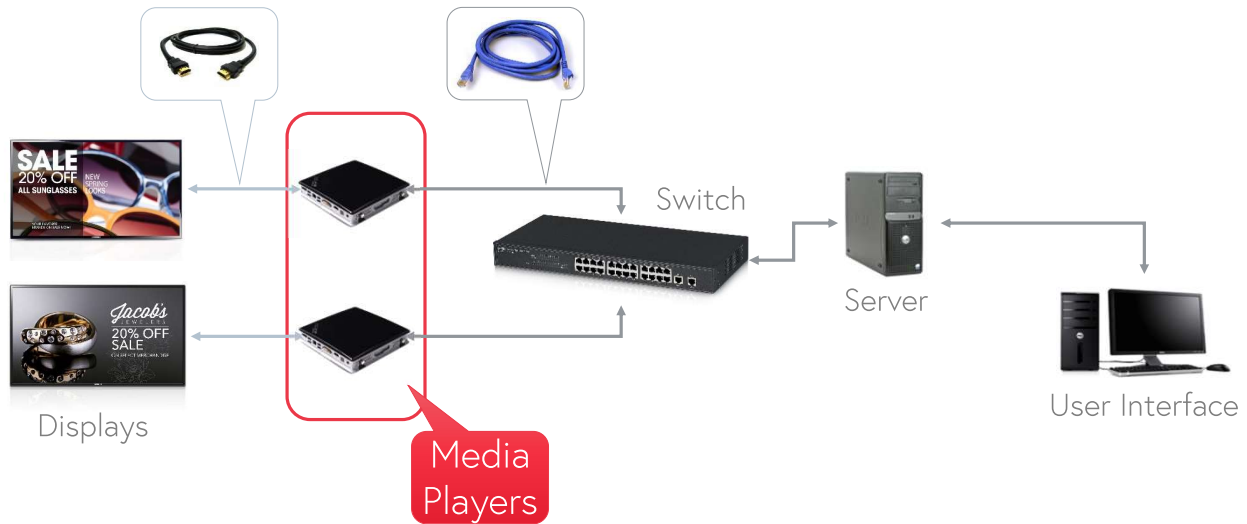


 DSCE Digital Signage Certified Expert

134

Where a Media Player Fits

Digital Signage Media Players



DSCCE Digital Signage Certified Expert

Media Player Types

Digital Signage Media Players

- That definition is very broad, so in order to begin sorting through all the different types of media player, we need to break them down into two main categories:
- **PC based media players**, meaning they are essentially Windows computers.
- **Appliance based media players**, which are specialized devices made to run alternative operating systems, or custom software packages.
- Each type can take several forms, and will vary in size and configuration, so let's examine both in more detail.



DSCCE Digital Signage Certified Expert

PC Based Media Players

Digital Signage Media Players

- PC based media players, as the name implies, are essentially PCs customized to fit digital signage applications.
- This typically involves reducing the form factor of the PC, making it smaller. That allows it to be mounted in a larger variety of ways, and thus easier to install.
- Additional features may be designed into the device, making it more specific to digital signage. These may include:
 - Passive cooling
 - Larger numbers of video outputs
 - Specialized mounting brackets
 - More durable components
 - Solid state storage



 **DSCE** Digital Signage Certified Expert

137

Appliance Based Media Players

Digital Signage Media Players

- A new breed of media player has emerged in recent years, aiming to replace traditional PC based units in digital signage deployments.
- These appliance-based media players are customized devices that don't run on Windows.
- Instead, they will run a mobile operating system like Android, or a custom software environment, dedicated to a single application.
- These new appliances are generating considerable market buzz and interest, and have several advantages, but also have limitations that must be considered.
- Appliance based media players fall into the following categories:
 - **Custom Software Based**
 - **Android Based**
 - **Display Embedded versions of either type**

 **DSCE** Digital Signage Certified Expert

138

Custom Software Based

Digital Signage Media Players

- **Custom software-based** media players are designed around a specific digital signage software solution.
- These may be based on PC type components, such as a single board computer, a system on a chip, or mobile type components, like a tablet or smartphone.
- Some custom software-based media players are built using a PC OS, such as Linux, but are designed not to provide access to an operating system. They will only run a specific software program, and present that to the user.
- Custom software-based media players can be very small, due to the integration of components.



 **DSCE** Digital Signage Certified Expert

139

Android Based

Digital Signage Media Players

- **Android based** media players are built around an Android set top box, using similar components to an Android smartphone or tablet.
- These will run the Google Android operating system, offering the flexibility to run a variety of applications designed for that platform, not unlike a PC based media player.
- Like custom software-based media players, Android based media players can be very compact.
- These are becoming popular due to lower cost, and relatively high performance per dollar spent.
- Typically, Android based media players are sold bundled with a specific software solution, but generic ones can be found that will run any Android application.



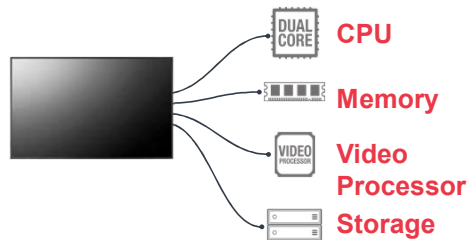
 **DSCE** Digital Signage Certified Expert

140

Display Embedded

Digital Signage Media Players

- Some manufacturers are offering **display embedded** media players, built right into the display devices you are purchasing.
- This can simplify the digital signage system, if the media player and its software are able to meet the needs of the application.
- These embedded media player options are typically either Android based, or custom software-based media players.
- Embedded media players may be very basic and offer USB ports for local playback, have LAN ports for network use, or both.



 **DSCE** Digital Signage Certified Expert

What to Look for in a Media Player

 **DSCE**
Digital Signage Certified Expert

Getting to the Media Player...

What to Look for in a Media Player

- Once we know what content and software will be run on the media player, this will tell us exactly what type of media player is needed, and what specifications it needs to have.
- Always carefully consider the requirements of the software and the content selected before finalizing a media player choice. Software providers will typically list the specific hardware requirements for their products.



 DSCE Digital Signage Certified Expert

143

Hardware Specifications

What to Look for in a Media Player

- Just as when you select a computer for your own personal needs, you must consider several specifications on the media player and ensure that they meet or exceed the needs of your chosen software package.
- **CPU:** The processor must be powerful enough to run the OS and provide ample horsepower to the digital signage software.
- **RAM:** You need enough memory to provide smooth playback of all types of content.
- **Storage:** Enough storage must be provided to ensure the content can be stored on the media player without running out of space.
- **GPU:** The graphics card must be robust enough to provide the rendering capacity the software requires.
- **Physical Size:** It dictates location, mounting, and can limit the capabilities of a media player. The smaller the unit, the more restricted the specifications will be, and the fewer IO ports you will have.



 DSCE Digital Signage Certified Expert

144

Media Player Interfaces

What to Look for in a Media Player

- **Video**

- Media players offer the standard video outputs found on most computers.
- HDMI is now typically standard, and you may also find DisplayPort.
- Some models of media player may offer multiple video outputs that can be used simultaneously. This allows a single media player to address multiple displays, or a small videowall. This can also be a cost savings measure, using fewer media players.
- This will be dependent on the software package, so consult the manufacturer BEFORE using multiple video outputs in this fashion.



 **DSCE** Digital Signage Certified Expert

145

Media Player Interfaces

What to Look for in a Media Player

- **Audio**

- With HDMI including audio, most media players cover audio in that fashion. However, many will also have a separate audio output in case the application requires it.
- This audio output is typically a 3.5mm "headphone" style stereo audio output. Some devices may have a set of stereo RCA connectors, in place of this audio output.
- Some computer-based players may even support surround sound output, but it's applications in digital signage are limited.



 **DSCE** Digital Signage Certified Expert

146

Media Player Interfaces

What to Look for in a Media Player

- **Control**

- Some media player devices may offer a RS232 serial or "com port" output for display or other hardware control.
- If supported, this port may be used by the software to monitor the display's function, and to control the display, for power on/off, input changes, volume, etc.
- Different software packages will offer varying levels of control integration, so make sure to verify not only that the player offers a control output, but that the software supports the functions you wish to use, and that it supports the specified brand and model of display.
- Some displays and players may also offer control over IP, to further simplify installation.
- Control may also be handled via the HDMI connection, using CEC.



 **DSCE** Digital Signage Certified Expert

147

Media Player Interfaces

What to Look for in a Media Player

- **Network**

- Network interfaces are a key part of any digital signage system. Without a network, how will the device communicate to its server and receive content?
- A standard Ethernet port has become commonplace on all players. This will allow connection to any LAN.
- Some player devices may offer wireless networking built in, or as an upgrade.



 **DSCE** Digital Signage Certified Expert

148

Media Player Interfaces

What to Look for in a Media Player

- **Peripherals**

- Players will typically have one or more USB ports to add extra peripherals to the system. These additional peripherals can be used to provide extra functions such as a touch overlay for interactivity or cameras and sensors for metrics.
- Devices such as touch screen overlays, cameras, additional speakers, extra storage, printers, or keyboards and input devices, may be added.
- However, it is important to verify that the software package will support these peripherals, and in the case of hardware players, that the system itself can operate them.



 **DSCE** Digital Signage Certified Expert

149

Warranty and Durability

What to Look for in a Media Player

- **Durability**

- Any device with moving parts will require service and will eventually wear out. Many media players are moving towards a fanless configuration and replacing platter-based drives with solid state flash storage.

- **Warranty**

- Media players typically come with a one-year warranty. Additional years of warranty coverage may be purchased from some manufacturers.



 **DSCE** Digital Signage Certified Expert

150

Maintenance and Upgrades

What to Look for in a Media Player

- **Maintenance**
 - Media players that have moving parts will require physical maintenance. Fans will need to be dusted out, to maintain proper cooling.
 - Updates to the operating system are also an issue for PC based media players. Since most run on a Windows platform, OS updates are released on a regular basis. These may or may not need to be installed, based on end user requirements on their network.
- **Upgrades**
 - Upgrades to hardware may need to be performed to keep media players current.
 - Android and custom software-based media players are not usually able to be upgraded in terms of hardware.
 - PC based media players may be able to be upgraded, with CPU replacements, RAM increases, and hard drive swaps.
- **A general note on updates and maintenance; always consider version 2.0! Meaning that you need to consider that as digital signage software improves, hardware requirements will increase.**

 **DSCE** Digital Signage Certified Expert

151

When to Use Each Type

 **DSCE**
Digital Signage Certified Expert

152

Types of Suppliers

When to Use Each Type

- There are four types of providers in the digital signage universe:
- **Software Only:** companies that only sell digital signage software packages. They will often have recommendations on preferred media player vendors and will always have listed specifications on media player requirements.
- **Software + Media Players:** companies that will sell both software AND media players. They will typically sell just software by itself, with listed specifications, or software bundled with their own branded media players.
- **Software + Dedicated Media Player:** companies that will sell both software and media players as a bundle. The media players they sell are typically customized just to run their specific software solution.
- **Media Player Only:** companies that sell just media players, and not software at all. They manufacture a range of media players that fit different specifications and requirements.

 **DSCE** Digital Signage Certified Expert

153

Words to the Wise...

When to Use Each Type

- PC based media players
 - High performance
 - Upgradeable and expandable
 - Can be used with multiple software packages
 - Comes in a variety of sizes
 - Requires more power to operate
 - OS may require updates
 - Moving parts reduces reliability
 - Can be more expensive
 - More available options can lead to confusion



 **DSCE** Digital Signage Certified Expert

154

Words to the Wise...

When to Use Each Type

- Appliance based media players
 - ✓ Lower cost
 - ✓ Optimized and bundled with a specific software package
 - ✓ Can be extremely compact
 - ✓ No moving parts, higher reliability
 - ✓ No need (typically!) for updates
 - ✓ Low power consumption
 - ✗ Lower performance
 - ✗ Not upgradeable
 - ✗ Only compatible with a specific software package



 **DSCE** Digital Signage Certified Expert

155

Digital Signage Audio

 **DSCE**
Digital Signage Certified Expert

156

The Audio Component of Digital Signage

Digital Signage Audio

- The concept of audio and moving pictures goes back to 1926 when Warner Brothers, in conjunction with Western Electric, introduced a new sound-on-disc system.
- Fast forward to the "modern" era and we all agree that the audio component cannot be ignored.
- So, this is an important a part of the digital signage revolution. Right? Well not quite so fast.
- The concept of audio seems relatively simple but there are several issues to consider not the least of which is understanding that digital signage has different purposes than motion pictures, television, or home cinema and many more serious restrictions to overcome.



 **DSCE** Digital Signage Certified Expert

157

The Audio Component of Digital Signage

Digital Signage Audio

- There is an ongoing debate (pro/con) about using audio among digital signage experts.
- One thing for all to agree on is that audio has a significant effect on viewers.
- Those on the "pro" side note it can be attention grabbing, stimulating, informative, motivating, and reinforce a call to action.
- The "con" side of the debate points out that audio is fraught with many hurdles in digital signage and may end up being a big negative.
- It's a lot easier to negatively impact your digital signage effectiveness with "bad" sound than it is to enhance it with "good" sound.
- If the audio is not carefully designed into the system and carefully controlled, it can negatively encroach into the surrounding areas and establish a space which people will proactively avoid.

A recurring comment we hear is that unless you're a real expert at using audio, you're probably going to do it wrong.

 **DSCE** Digital Signage Certified Expert

158

The Audio Component of Digital Signage

Digital Signage Audio

- Yes or no to audio will depend on the installation's environment and the objective of the digital signage system.
- If you are competing for attention in a high ambient noise environment such as an airport or train station, you probably do not want to use audio.
- You won't want to use audio if the viewer is moving quickly by the sign or will not be at the display for more than a few seconds.
- **But, if you have an application where you have a captured audience or where someone is in line or in an environment where they are likely to stand for a few minutes, then you may want to consider an audio option.**



 **DSCE** Digital Signage Certified Expert

159

The Audio Component of Digital Signage

Digital Signage Audio

- So, what is the best approach where audio is a "reasonable" consideration?
 - Design the system from a visual perspective and use sound to create attention and draw the viewer in for the visual content.
 - Emphasize the audio message visually. The audio (in most cases) may encounter environmental obstacles and there may well be interference with ambient noise in and around the area.
 - With audio consider if the content is appropriate only for those in front of the digital sign or of interest to all around the area. This may determine the type of audio you will require.
 - Consider the balancing act where the retailer wants to connect with those in viewing range of the digital sign, but do not want to bother customers in other areas who may be annoyed at the message that has no relevance to them.

 **DSCE** Digital Signage Certified Expert

160

The Audio Component of Digital Signage

Digital Signage Audio

- There are typically two options to the use of audio.
- The first is to cover an area that's equivalent to the video screen coverage.
- The second is to limit the audio to a very narrow area so that only a very specific "spot" is affected by the sound.
 - You can use speakers in the display. Inexpensive, but hard to aim and control the sound.
 - You can use an overhead speaker with narrow cone of sound. These may be triggered by movement or proximity.
 - Use a speaker system with a built-in microphone that monitors ambient noise in the area and rides gain (up and down) on the audio to properly compensate for the variance.



 DSCE Digital Signage Certified Expert

161

The Audio "Rules" to Live By

Digital Signage Audio

- **Understand that digital signage is primarily (with few exceptions) a visual medium by design, practicality, and necessity.**
- The use of audio in a digital signage system may make it more effective.
- Use audio as an accent to the stand-alone visual image.
- Use close captioning sparingly. It detracts from the visual message.
- Be prepared to test the audio where the system will reside.
- Gain the necessary expertise with the audio technologies and how to properly employ them taking into consideration the many external variables that affect whether audio make the system better, or worse.
- **Remember some venues will not permit audio!**



 DSCE Digital Signage Certified Expert

162

Interactivity and Mobile



163

Interactivity

Interactivity and Mobile

- Smartphones have led to a revolution in how we communicate.
- Text messaging is replacing phone calls and emails as the preferred rapid communication method.
- Facebook and Twitter have altered how we interact with one another.
- This change is affecting digital signage, and the next stage in our evolution is involving how smartphone interaction and apps will be integrated into the digital signage experience.

Everybody expects the screen to respond to a touch!



 DSCE Digital Signage Certified Expert

164

Mobile

Interactivity and Mobile

- There are all kinds of interactive technologies, but basically boils down to touch displays, in either single touch or multi-touch.
- Integrated touch displays can be purchased from a display manufacturer or you can get customized touch overlays, provided by a third party.
- **QR codes, NFC, and beacon technologies are allowing us to tie cell phones into the digital signage system.**
- Information can be passed to the phone as someone walks by a digital sign or enters an area.
- We can track and analyze traffic and behavior patterns, providing detailed analytics and audience metrics.
- Smartphones are now part of POS systems, allowing customers to pay with their phones!



 **DSCE** Digital Signage Certified Expert

165

Selecting a Hardware Vendor

 **DSCE**
Digital Signage Certified Expert

166

Selecting the Hardware Vendor: The 5P Analysis

Selecting a Hardware Vendor

- There is a significant need to analyze the vendors of the products you sell and the services of those who support your companies' operations.
- By a careful use of the 5P Analysis, you will find evaluation tools to help you make the "correct" buying/selling decisions and vendor selection for your company.

5Ps... Pathway to Success

Product
Price
Program
Process
People

 **DSCE** Digital Signage Certified Expert

167

The 5P Analysis

Selecting a Hardware Vendor

- **Product:**
 - A competitive product is a "given" for entry into the market. But due to parity and commoditization, this area is seldom a differentiator, and rarely a key reason to buy from a manufacturer.
- **Price**
 - Prices fluctuate and seek their own levels. Price can be a temporary deciding factor but will NOT outweigh poor programs, processes, and poor relationships.
- **Programs**
 - Programs, like price, simply must be competitive without "buying" the business.
- **Process**
 - This factor determines how easy a manufacturer or distributor is to work with. All the good feelings about product, price, and programs is negated by poor processes and difficulty of doing business.
- **People**
 - It is important to understand that it is best to do business with those that make doing business the easiest, and those they like the most.

The sweetness of low price is quickly forgotten once the first problem arises!

 **DSCE** Digital Signage Certified Expert

168

Networking: Digital Signage Connectivity

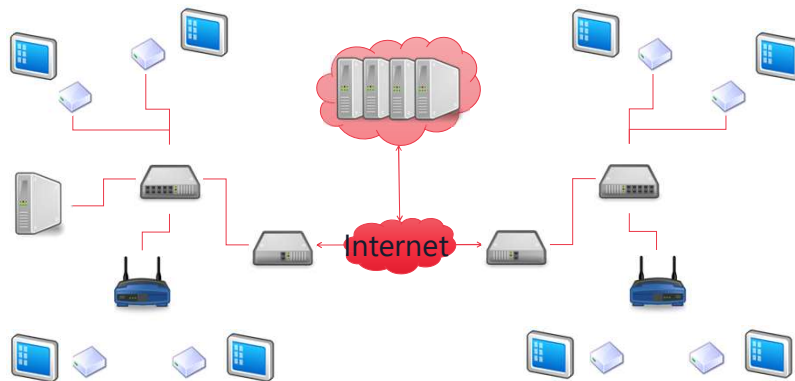


169

The Network in Digital Signage

Networking: Digital Signage Connectivity

- Every digital signage system is defined by its backbone, the network.
- Connecting multiple sites together, or connecting multiple players within a single site, the network allows all the players to communicate with the central server, to receive content, schedules, and management.



 DSCE Digital Signage Certified Expert

170

Types of Networks

Networking: Digital Signage Connectivity

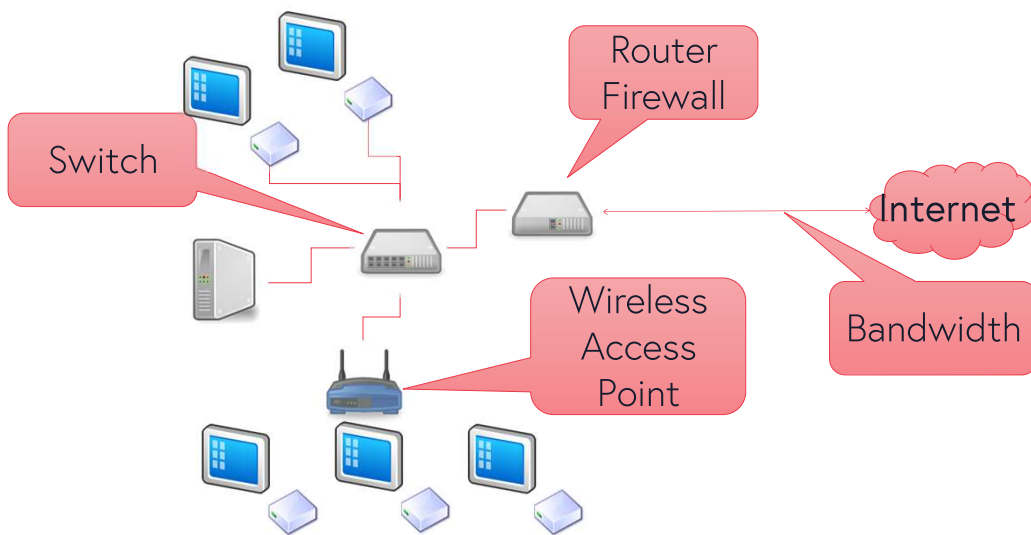
- **LAN (Local Area Network)**
 - A LAN connects network devices over a relatively short distance.
 - A networked office building, school, or home usually contains a single LAN, though sometimes one building will contain a few small LANs, and occasionally a LAN will span a group of nearby buildings.
- **WAN (Wide Area Network)**
 - A WAN is a network that spans a large physical distance, or in the case of the Internet, the entire world.
 - A network device called a router connects LANs to a WAN.



 **DSCE** Digital Signage Certified Expert

Basic Components of a Network

Networking: Digital Signage Connectivity



 **DSCE** Digital Signage Certified Expert

Components of a Network

Networking: Digital Signage Connectivity

- **Switch**
 - Allows the connection of multiple devices together into a coherent network
 - Will have several different ports, from as little as 5, up to 48
 - Multiple switches may be connected to increase network size

- **Router**
 - This device connects two different networks together
 - Most found as the device connecting a local network to the Internet
 - May include a wireless access point to create a wireless network



 **DSCE** Digital Signage Certified Expert

173

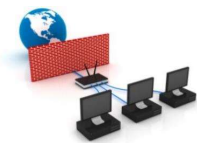
Components of a Network

Networking: Digital Signage Connectivity

- **Firewall**
 - Software that may be running on a router, or on a dedicated piece of hardware
 - Firewalls filter traffic coming in and out of the network
 - Connecting a digital signage system will require configuring the firewall to allow traffic to pass through

- **Ethernet (RJ45)**
 - The standard category 5 cable that connects networked devices together
 - Terminated with an RJ45 connector

- **Network Adapter**
 - The device inside a computer that allows it to connect to the network
 - May be wired or wireless
 - Some computers must have wireless network adapters added to them by inserting a card, or adding a USB device



 **DSCE** Digital Signage Certified Expert

174

Wired, Wireless, Cellular Networking

Networking: Digital Signage Connectivity

- Wired and wireless networks operate in the exact same way; in that they both use the same IP protocol to communicate with one another.
- Wireless networks can be run independent of; or in conjunction with; wired networks. Both wired and wireless each have advantages and disadvantages.
- Wireless networking; while convenient; is not as fast or stable as a wired connection. Many things can interfere with a wireless connection, such as thick walls, or large amounts of concrete or steel between a wireless device and the access point.
- Cellular modems are becoming more and more of a commonplace device in today's networked world. Prices are dropping quickly on the hardware, and service costs are slowly becoming affordable.
- In any wireless system, reception is the key to function. Inside a large office building, or near high powered electrical devices, it is possible that reception may be reduced, or even eliminated.
- Make sure you evaluate the reception of any location you plan to deploy.



 **DSCE** Digital Signage Certified Expert

175

Digital Signage Operations

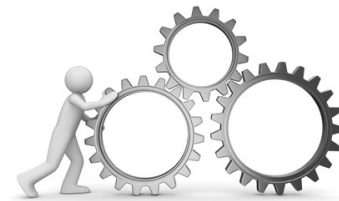
 **DSCE**
Digital Signage Certified Expert

176

Operations: The Key That Makes It Work

Digital Signage Operations

- The topic of operations is left until the very end, because that is exactly where it fits. It is the final steps that make a digital signage network operable.
- Operations involves many key facets including:
 - Logistics and planning
 - Project management
 - Systems installation
 - Connecting all the pieces of the "puzzle"
 - Verification and testing
 - Training
 - Daily operation of the network
 - Continuing maintenance, service, and support



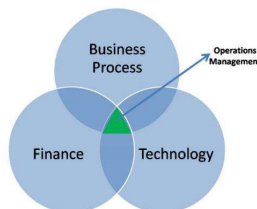
 **DSCE** Digital Signage Certified Expert

177

In the End...

Digital Signage Operations

- Under the heading of operations are the day-to-day processes that make the system work and continue to work at a profit and definable/controllable cost.
- It begins with planning, then logistics, and finally project managing the installation to plan.
- Once the installation is complete the entire network needs to be managed daily.
- Continuing maintenance is a requirement and not accounting for this will necessitate additional outlays of money and negatively affect the total cost of ownership or TCO.
- When (not if) something does "go wrong," service and support must be in place beforehand in order to save the day.



 **DSCE** Digital Signage Certified Expert

178

Partnerships and Risk Abatement

Digital Signage Operations

- Many companies do not have mastery and control over all The 7 Key Elements, and they must look to partners to supply that missing knowledge or experience.
- Several of these elements might fall into consideration for potential partnerships.
- Digital signage network design is an area where a subject matter expert or consultant may be employed.
- Another area commonly outsourced is content development. There are several companies that focus on developing content for hire and could be one of your first stops in developing strategic partnerships.
- Also consider the outsourcing of logistics and installation, especially for regional companies. Having someone else manage getting all the products to site, handling installation, and managing the logistics can be big benefit, especially if you get a project beyond your usual coverage area.

To keep digital signage simple, outsource the most complex elements that are not part of your core business!

 **DSCE** Digital Signage Certified Expert

179

Selling Digital Signage

 **DSCE**
Digital Signage Certified Expert

180

The Only Constant is Change

Selling Digital Signage

Understand its inevitability
Study it
Embrace the opportunities
Grow from it
Profit from it



 **DSCE** Digital Signage Certified Expert

181

Changing Role of a Salesperson

Selling Digital Signage

- This is the age of big data and information at all levels surrounds us.
- Customers are more sophisticated than ever before and do their own research upfront, connect with others, and they're aware of their options.
- This demands much more subtle sales skills, and a new type of sales personality contrasted to someone who's "simply" an expert at selling.
- A salesperson today is one who can draw on their body of knowledge and experience to help identify and solve a prospects' problem.
- The sales role is full immersion and understanding of all the elements of digital signage.
- First you must seek and clarify the objectives before moving forward.
- Take the customer on an exploration of what each element depends on.
- Sort out the variables and options.
- Provide tangible value.

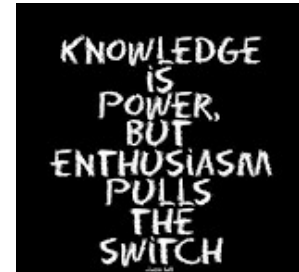
 **DSCE** Digital Signage Certified Expert

182

Value of Knowledge

Selling Digital Signage

- Immediately **distinguishes** you from others
- Makes **you** a valuable resource
- Helps you build rapport and gain trust
- Helps in asking appropriate questions in **defining needs**
- Helps you **articulate** how products may help
- Increases the **opportunity** for repeat business
- Increases referrals
- Improve ability to **network**



 **DSCE** Digital Signage Certified Expert

183

Become a Partner Not a Vendor

Selling Digital Signage

- If your goal is selling something to someone, the likelihood of a partnership is near zero. It is about peddling your wares, not understanding and solving business problems.
- Business partnerships come together by identifying the synergies between organizations resulting in strong benefit for both.
- Vendors provide data, but partners interpret the data with recommendations.
- Vendors take orders, partners inquire as to why they want what they want.
- Vendors are reactive, or even responsive, but partners are proactive.
- Vendors take a narrow look at the world, but partners see the world in totality.

Putting this together, customers have vendors, but clients have partners

 **DSCE** Digital Signage Certified Expert

184

Customer Focus

Selling Digital Signage

- Leave your personal objectives, your sales goals, and your quotas at the door.
- Instead, adopt the mindset that you are there as an inside consultant to help your prospect with the digital signage products and services you have to offer.
- Think of problems beyond the obvious and then solutions.



 DSCE Digital Signage Certified Expert

185

Don'ts and Do

Selling Digital Signage

- Don't focus on sales technique
- Forget about the perfect sales introduction
- Forget about the perfect sales presentation
- Forget about overcoming the most likely objections
- Forget about finding the perfect close

**DO focus on the customer's problems
and needs, and
your digital signage solutions.**

 DSCE Digital Signage Certified Expert

186

Understand the Buyer

Selling Digital Signage

- Discover the stakeholders
- Discover the decision makers
- Discover how the buyers defines value
- Discover their "hot buttons"
- Discover how they make decisions
- Discover the best approach to gain agreement

Note: It's different every time



 **DSCE** Digital Signage Certified Expert

187

6 Reasons Prospects Choose You

Selling Digital Signage

1. **Their experiences with you.** Your prospects will judge you based on how you make them feel. This includes how well you communicate, your knowledge and how you allow them to interact in ways they prefer.
2. **Your benefits.** There are two basic reasons why people purchase anything: to increase pleasure or decrease pain. Focus on your most compelling benefits and then, make sure you deliver on your promises. Be specific.
3. **Your trustworthiness and reputation.** Ensure that your customers, prospects, and colleagues view you as a person of value. Keep in mind that your credibility, plausibility, and truthfulness will also win you far more customers than exaggerated claims and over-the-top promises.
4. **The value they receive.** Price is important, but the majority do not consider price alone when making their buying decisions. Rather, they consider value: the difference between what something costs and its worth to the buyer.
5. **Make transactions easy, safe, and secure.** People are more likely to hand over their money when they perceive the risk as minimal.
6. **How well you articulate their most pressing concerns.** You must get into your prospects' heads. Listen carefully to their expressed opinions and feelings (particularly as they relate to your products or services) and be sure to address them directly.

 **DSCE** Digital Signage Certified Expert

188

In Conclusion...



189

Welcome Aboard!

In Conclusion...

- Congratulations! You are now well on your way to becoming a Digital Signage Certified Expert.
- You have been exposed to the:
 - Digital Signage Market, Applications and Customers
 - ROI/ROO and Business Models
 - Content
 - System Design
 - Hardware and Software and Selecting a Vendor
 - Connectivity and Networking
 - Operations
 - Selling Digital Signage
- Most importantly, you understand The 7 Key Elements of Digital Signage and how they interact.
- You understand objectives and relevance.
- You may review all that has been presented in preparation for the DSCE certification exam.
- Upon passing the exam, you will proudly earn the DSCE designation, and receive your certificate of completion.



190



ANY QUESTIONS?

“ Successful people ask better questions, and as a result, they get better answers. ”

Tony Robbins

191

Digital Signage Experts Group

Contact Us

Web:
www.dseg.org

Phone:
(442) 245 - 8332

Social:
@DSEG



Thank You!

192