White Paper

Planning and Providing

MEETING PLACES

For Today's Work Environments

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January 2017

Better Meeting Spaces

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One of the most critical contributor to organizational success or failure is effective meetings – whether its between 2 or 200 people – the investment in collaboration, sharing, and problem solving offers the greatest opportunity for progress or the biggest threat to cohesion and morale.

Today's meetings run the risk of distracting from the people, ideas, and issues with technology, either installed to support these tasks or the absence of it altogether. Too often design and architecture elements get in the way of allowing people to be focused and engaged. Too often outdated or too complicated technology gets in the way of sharing and collaborating. The challenge is offering not only the appropriate set of technology tools suited for each meeting room size and audience, but also having tools that are easy enough for laymen to operate yet robust enough to support the tasks at hand. Simple, Affordable, Smart.

Regardless of how Workplaces continue to transform themselves, there remain three primary aspects any meeting space needs in order to support and enable effective meetings.

- Display
- Conference
- Privacy

Display. One of the primary purposes of meeting is the sharing of ideas, facts, and images. An appropriate picture conveys a thousand words. The ability for all attendees to see and interact with the visual aspects being shared may be the single most important element for successful meetings. Size, Shape, Brightness, Connectivity, Availability, and Location are all critical for proper support of effective meetings.

Conference. Gathering the right people, in the right place, at the right time may be the most critical element of whether or not a meeting produces positive results. That means having the right size space available when its needed. That means providing seating that supports effortlessly. That means the appropriate worksurface space for the tasks at hand. That means availability to power sources and data portals for the meetings tools introduced into each meeting. That means real-time access to remotely domiciled attendees.

Privacy. Real collaboration occurs when distractions, both visual and acoustical are eliminated. Whether it's the ability to control visibility into the space or elimination of distractions outside the space – the ability to control this access is a key element to effective, supportive meeting environments. Equally critical is the ability to control the acoustic elements – both being overheard outside the meeting space and the intrusion of outside noise and sounds into the space play equal roles in effective meeting spaces.

Display

In the not so distant past, requirements for large displays were the domain for the Projector and Screen pairing – and for the most part still are. However about five years ago breakthroughs were made to allow Liquid Crystal Displays (LCD) Flat panels, most commonly known as TVs to range upwards of 100-inches and have become relatively affordable.

There are several factors that should be considered when selecting display types. Some of the most important are size, cost, location, and viewing requirements.

Size is the first consideration. There are actually two formulas that can be used to calculate the size of the display that should be used depending on what type of viewing is required; videos, presentations or high-level details. The higher level of detail that is required, the larger the display image needs to be.

- 4·6·8 Rule
  Take the width of the display (existing or proposed) and multiply by either 4 to determine detailed viewing or 6 to determine presentation viewing or 8 to determine full-motion video viewing for the furthest back viewer.
  Example: 100" Display X 4 = 400" or 33' back for the furthest viewer for highly detailed viewing.
  100" Display x 8 = 800" or 67' back for the furthest viewer for video viewing.
- 3 and a Half Rule
  Take the average distance a viewer will be from the display image and divide that distance by either 3 or 1.5 to determine the range of display size should be – larger for detailed viewing, and smaller for video viewing.
  Example: Average distance from Display 14' or 168"
  168" ÷ 3 = 56" minimum screen size for the space
  168" ÷ 1.5 = 112" maximum screen size for the space

Currently, given today's technology and marketplace, as a rule of thumb, anything larger than an 80" image size leans more favorably towards projection and screen application. Anything smaller than an 80" image size a Flat Screen or TV are the preferred way to go.

Consumer vs Pro Grade Flat Screen. Believe it or not, there is a difference between the TV's you can buy at Costco or Best Buy and the one the AV Integrators typically sell. Although the gap has been narrowed, there are several differences that you need to be aware of. Not too long ago, the number of digital connection ports (HDMI, DVI, RJ45) were limited to Pro Grade models of flat screens (why are they called Flat Screens and not TV in the industry? Because TV's typically have tuners in them, where a Flat Screen does not and relies on inputs for their signal). Today however, an acceptable number of digital ports can be found on consumer grade TV's that allow their use in a commercial space easier. A Pro Grade Flat Screen has a more robust power unit due to the fact that most Flat Screens in commercial use are on from 8 to 12 hours every day while most TV's in homes are typically on less than 6-hours a day. A more robust power unit allows the manufactures to offer a stronger warranty, typically 1-year standard. Most manufactures void their warranties if you place a consumer TV in a business environment simply due to the "time on" basis they know these units, which they weren't designed for, will be operating.

To 4K or Not to 4K. First off – what is 4K. Its also known as UHD or Ultra High Definition. Both refer to the resolution of the screen in lines per inch. The more lines of resolution per inch, the more vivid the picture. Traditional High Definition starts at 720 Lines of Resolution per inch. The most common High Definition TV on the market today is 1080. There are 1,080 lines of resolution per vertical inch of the screen. Most broadcasts on television today are at the 1080 level. Blu-Ray is 1920. So in contrast, 4K or UHD has 4,000 lines of resolution per inch! Nearly four-times today's most common format. When 4K TV's were introduced about 5-years ago, a 70" 4K TV cost more than $40,000! Today you can pick them up at Costco for a fraction of that amount. The current challenge is content – finding a way to upscale typical formats, 1080 or 1920 to the 4K level! Its coming – but might be a while. So does it make sense to purchase 4K for most business applications – not yet. Most business applications are for presentations, document reviews, and video conferences. None of these really benefit from or support a 4K format. For the time being, save money and buy a larger 1080 TV.

Projection: For images requiring larger than 80" it still makes sense, viewing and economic, to go with a projector and screen pairing. Projectors are rated in how bright they are. That measurement is in Lumens. The higher the Lumen count, the brighter the projector. A common threshold for projectors in a typical business environment is 3500 lumens. If the space is bright, exposed to a lot of windows or overhead lighting, 5000 lumens would be a better minimum starting place. Mounting a Projector can be from a ceiling or wall. There are permanent stationary mounts and electric lifts that raise and lower the projector to the proper level when in use. The distance from the screen to the projector is called the "throw distance" and this will be important deciding both the specific lens needed and brightness of the output required. The further back the projector, the brighter a projector should be. There has been a growing trend in the technology called "short-throw projection" which pairs a projector with special lenses and allows amazingly large images 80'-140" to be had with the projector mounted to an arm on the wall above less than 24" away! (the education market has fully embraced this technology). It's most common to project onto a screen with a reflective material. These screens can be mounted to a wall, dropped from a ceiling, or be permanently mounted to a wall. You can even project directly on the wall in certain circumstances. For screens larger than 110" wide or in environments with a lot of traffic in front of them or lots of air circulation, consider a side "tab-tensioned" screen, which holds the screen taunt while deployed.

Conference

The primary purpose for most assembly places to the gather a group of people in a single place to share information and ideas. Supporting these gatherings means having the right space available at the right time. Availability is a key metric for providing effective meeting spaces. Meeting spaces have evolved from traditional formal conference rooms to huddle spaces to the local Starbucks or your own cafeteria.

Primary considerations for meeting rooms are the number of people meeting in the space would accommodate and the typical functions in the space; presentations, collaborations, training, interviewing, video/tele-conferencing are several typical usages.

Frequency of use is also a prime consideration in order to provide enough meeting rooms. Are there more of one kind of meeting than another? Can a single meeting space host multiple kinds of meetings? Are there furniture or equipment specific requirements needed for specific rooms? Conducting a survey of the companies population and meeting frequency would be a purposeful step in planning for providing these types of spaces.

If meeting with others for the purpose of information sharing or collaboration is the primary purpose for a meeting room, the sizing for the typical number of attendees is crucial. The room needs to be large enough to accommodate people, furniture and equipment. Here are some spacing guidelines:

- Tables should be large enough to allow 36" to 42" for each chair around the table.
- 42" to 48" should be minimal clearance between the edge of the table to the wall.
- 84" clearance between the front of the table and any screen or flat screen display.

Next consider the table size and shape. Round tables are good for discussion-type meetings of six or less. Rectangular tables are best for presentations and any group over six. The table width should be at least 36"; and 42" or 48" is better for groups of eight or more. For groups of 12 or more consider a boat-shaped table (wider in the middle than the ends) or increase the table width to 48 or 54 inches to allow for line-of-sight for all the attendees.

Doors and windows – both internal and external are also an important consideration. Place the door on the opposite side of where the presentation display will be mounted. Presentation displays will typically work better without windows to outdoors – but typically not feasible – so adequate window treatments will be needed. Window treatments that can block between 90-97% of ambient light will provide the best display imagery. The ability to offer a roller-shade blind with a 95% opaqueness rating allows the perfect blend between some visibility to the outside and adequate light reduction required for display-oriented presentations as well as limited visual acuity for privacy needs. This level of opaqueness will also aid privacy, which is addressed later. Overhead lighting is also a concern – the ability to dim or modify lighting is a huge plus for most meeting spaces – especially those where the primary purpose is presentations. Dimmers or up-lighting reflective lighting will provide the best foot-candles for attendees to see the presentation and their work on the table in front of them. The target foot-candle range at table top level is between 20 and 50 foot-candles.

Room Temperature and ventilation is another key for providing effective meeting spaces. Ideally the ability to individually control the temperature in each room, although typically unrealistic. In a collaborative Study by the Helsinki University of Technology and the Lawrence Berkeley National Laboratory found that performance increases when the temperature is in the 69.8°-71.6°F (21°-22°C) range and decreases when the temperatures exceed 73°F (23°C). Researchers concluded that the height of productivity is reached at 71.6°F (22°C).

<u>Trends and Innovations</u>

- More conference tables are being built at the 44"to 45" Stand-up height and eliminating chairs altogether. The preferred table shape is an oval for these rooms and should be in the 42"to 48" wide and 72" to 96" length size in order to accommodate 6 to 10 people.

- Small Huddle spaces are increasing in both number and variety. These spaces range from 10' X 10" to no walls at all. Some offer soft-seating chairs, often with pull-up tablet arms and no table at all. Others are built around a video-wall with a "D" shaped table running from there – these are ideal for small presentations and video conferencing.
- More informal meetings are happening in cafés, cafeterias, lobbies, and other non-traditional public spaces. To support meeting in these spaces, a robust secure Wi-Fi network and access to power outlets will help these spaces flourish as meeting spaces, and as a bonus may help free up some of your existing conference rooms.
- Large Flat Screens that have an "eBoarding" feature that allows users to treat the flat screen as a whiteboard are becoming more numerous in size, feature set, and price-point. This ability allows the capture of content written on whiteboards, plus the ability to share collaboratively via electronic link to remote team members.
- Video-Conferencing is becoming more ubiquitous – the advancement of "cloud-based" video conference services allows users to access video conferences via a simple internet or G3 or better connection via their Smartphone, tablet, laptop, desktop or full-blown Video-Conference suite and reduce the cost to a few hundred dollars a year and have allowed this meeting technology to flourish. Providers such as Skype by Microsoft, Google Hangout, Zoom and BlueJeans are a few great and affordable providers.

Privacy

The ability to control what is being said and seen is critical in the production of desirable results. Privacy is a variable requirement, one that fluctuates from meeting to meeting and from space to space. The key is to offer the ability to vary privacy levels as desired.

Visual Privacy is typically the easiest to provide for conference and meeting spaces. Depending on the level of privacy required, options range from simple blinds on windows to opaque glass to no windows at all.

- Variable Visual Privacy for rooms with windows can be provided with louvered shades or roller blinds.
    - Vertical blinds are easy to manage and stow out of the way.
    - Horizontal blinds can be a maintenance concern – frequent wear and tear usage often leads to frequent replacement requirements or non-use, both fully open or closed.
    - Roller Shades of either 95% or 97% acuity rating provides premium shading allowing limited sight and light to pass through.
        - Powered shades allow frequent use, with stops at full open/closed, or multiple preset closing. Powered models also protect your investment by reducing wear-and-tear from user force needed to open and close.
            - Direct AC or Battery options are available
- Window treatments range from full opaque glass, including glass with a baked-on frit to impede visual acuity to press-on frosted decals (3M). Glass can also change from clear to opaque by applying an electrical charge that changes its state from opaque to clear.

For those meeting spaces that require the highest levels of privacy consider no windows at all. In these spaces, special attention should be given to the type and intensity of lighting and HVAC, assuring proper temperature and air flow.

- A recent trend in windowless conference rooms has been to use the display, especially if it's a flat screen, to show a loop of artwork, including scenery photography or loop in webcams from various places from around the world.

Acoustic privacy is gaining more attention as both legislation requirements increase and methodology improves. The need to prevent outside noise in is just as important as allowing inside sounds out. There are a variety of methods to create acoustic privacy for the varying levels of privacy required.

Measures of construction materials used to provide acoustic control

- **Noise Reduction Coefficient (NRC**) is a numerical representation of the amount of sound energy absorbed upon striking a particular surface. An **NRC** of 0 indicates perfect reflection; an **NRC** of 1 indicates perfect absorption.
- **Sound Transmission Class** (or **STC**) is a rating of how well materials attenuates airborne sound. In the USA, it is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. An STC of 0 indicates no sound blocking, an STC rating of 80 indicates no sound being transmitted thru a material.

Within any closed space, attention will need to be paid to control the reverberation or echo. Hard surfaces offer a relatively high STC, which is beneficial in blocking exterior noise from entering and internal sounds from escaping – but do little to improve the quality of the acoustic environment attendees will experience. In order to improve the acoustic quality within the space, high NRC materials will need to be added. These materials can take the form of Acoustic Ceiling Tiles, carpeting, drapes, and fabric tiles on walls, suspended from the ceiling or freestanding around the space.

Privacy Considerations for meeting Room Construction:

- Walls should extend from floor to the rigid ceiling deck above – not just to the ceiling tile grid work.
- Drywall construction should include insulation between outer and inner walls to block noise and sound transmission
    - Glass has a high STC (noise blocking) and is a very effective building material for conference rooms. However, special attention will be needed as mentioned above to provide for visual privacy. Glass also is a major contributor to reverberation or echo within a space and offsetting materials will be needed to address the acoustic quality within the space.
- If at possible, rooms should be carpeted.
- If ceiling tiles are used, consider adding a layer of insulation batting above to provide an extra degree of privacy.
- Door gap sealers should be used in those spaces where high levels of confidentiality are required.
- If possible, place conference rooms around the perimeter of the space in order to prevent adjacent occupants from overhearing conversation and sound from within the meeting space.

- Build “sound dams” over ceiling cold air return grates to block voice and sounds from exiting the meeting space and traveling thru the plenum and being overheard.

Conclusion

Today we have an almost infinite array of tools available to us to create places that stimulate and support people coming together to share, solve, create and collaborate. Our challenge is to blend exactly the right combination of options in order to provide effective meeting spaces that blends budget and functionality with purpose and possibilities. Solutions need to be flexible, changeable, functional and future-proofed. No one single solution set works for every application. Addressing these key primary attributes needed in every meeting space; Display, Conference, and Privacy - customizable solutions can be provided that not only support meetings but also propel people towards achieving every possibility. *There is no greater purpose in life than to collaborate and create with each other – success is sharing, solving, and creating!*

Coming together is a beginning, staying together is progress, and working together is success.
— Henry Ford

About the Authors

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