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Top Audio Visual Trends for 2015 and Beyond

A User's Guide For Design Professionals and Business Owners

The Greek Philosopher Heraclitus once said “there is nothing permanent except change.” Although I’m sure he meant this on a trans-humanist level at the time, he perfectly forecasted the state of the ever-changing audio visual (AV) industry 2,500 years later!

One of the most exciting parts of the audio visual industry is also its most challenging —a very fast rate of technological change that is unrivaled in many industries. Not only are the large-scale AV macro-trends constantly shifting to meet the demands of users, but the individual devices are changing just as quickly. Most of the technologies in use today in the professional AV industry are completely different from those technologies used just 15 years ago. This rapid rate of change can be challenging for even the most astute AV professionals to keep up with, so it can be especially overwhelming for clients and users who just want the AV systems to meet their needs now and in the future.

Let’s be honest, the ultimate goal of audio visual technologies in the workplace is to simplify collaboration efforts, promote efficiency, and minimize time wasted on commuting. Meanwhile, an AV system in an entertainment setting needs to deliver that stunning “wow-factor” that everyone loves. Gone are the days when there would be one purpose-built AV system for collaboration and a second system for entertainment. Most users want their single system to do it all. They want it to be easy-to-use, practical, reliable, and have that “wow-factor”—as they should!

With this said, here are PlanNet’s top audio visual trends for 2015 and beyond.

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Trend #1 The Need for Digital

The audio visual industry has been undergoing a massive shift from analog to digital technology over the last several years. This shift was brought about to meet the demand for higher resolution video, to reduce the problems of radio frequency (RF) and electromagnetic interference (EMI), to reduce the need for specialty cabling, and to make AV systems more "data-network-friendly."

Another key motive for the shift to digital is the introduction of wireless data networks. Although analog AV signals have been flying wirelessly around the atmosphere for decades in the form of radio, TV, wireless microphones, etc., digital AV signals travelling over wireless data networks offer much better security, device-specific configuration, and the limitations of the tightly-controlled radio frequency spectrum are greatly reduced.

For example, here's a snapshot of the future of computer graphics.

Video Graphics Array (VGA) (the hardware that connects your computer to your monitor) has been around for over 25 years. Intel and AMD announced in 2012 they would start phasing out VGA connector support on their motherboards. VGA is expected to be completely eradicated from all new devices by 2015.


analog VGA connector

Why? You might ask. The reasons below indicate how older technologies like VGA are being left behind in a digital world. For example, VGA:

- does not support digital rights management (DRM);
- too large for tablets, ultrabooks, etc.;
- does not consolidate video/audio/ethernet/control/DC power;
- does not support the highest video resolutions; and
- it's not digital.


digital HDMI connector

The most common digital video connectors in use today are HDMI and DisplayPort, which replace VGA and DVI. There are other manufacturer specific digital video connectors like Thunderbolt, but it is not as widespread as HDMI and DisplayPort.

Trend #2 4K / Ultra High Definition (UHD) Video

4K/UHD Video are needed for two applications: extra-large video displays, and for fine resolution critical inspection viewing, such as what would be required in medical surgery procedures or in military applications where extremely high resolution images are essential.

4K is approximately four times the resolution of 1080p (which is a typical resolution for most home TV's).

There are still some challenges with 4K such as:

- displays needs to be upgraded to support higher resolution, frame-rate, and color depth;
- video systems need to be upgraded to support higher data rates;
- cabling and transmit/receive equipment needs to be upgraded to support higher data rates;
- no 4K video file-type has been standardized for residential or commercial distribution (it is unlikely that 4K videos will be sold on a physical medium like a disc);
- DRM encryption will continue to present technical challenges; and
- very limited native 4K content availability.

However the inevitable future is that emerging digital display interfaces will support 4K (HDMI 2.0, DisplayPort), and content will come in UHD as it did in HD in terms of Blu-Ray, FCC DTV migration, etc.

Trend #3 Lampless Projection

Traditional video projectors use very bright lamps to create the image. However, lampless projectors utilize laser/LED light sources that don't require traditional lamps. What this means is that LEDs (light emitting diodes) work in tandem with a fluorescent element and a laser within the projector's light engine to provide the light source and render the images. Essentially, each pixel becomes its own little projection lamp.

LED projector

The main advantage of this technology is that instead of the 2,000-hour lamp life expectancy that you would get from a traditional projector lamp, **the LEDs are predicted to last approximately 10,000 hours plus without replacement!** This obviously provides a better cost savings over time. In addition to life expectancy, lampless projectors run much cooler, require less power, are quieter (due to much less fan noise), and are smaller and lighter than traditional projectors.

As with any upcoming technology it has some current limitations, such as:

- resolution for mid-range projectors of this type is typically limited to WXGA (1280x768), although more and more 1080p models are coming onto the market;
- brightness at the time of writing this article is typically limited to 6,500 ANSI lumens (most are much lower);
- color accuracy can be a challenge; and
- mainly prosumer brands are available: Casio, BenQ, Optima, and ViewSonic. Professional projector manufacturers are just now starting to offer LED projector products.

Trend #4 "We want more Wireless"

We're constantly asked about the current state of wireless video technologies and our response has been the same for the last couple years: "These technologies are just now arriving and they're *almost* ready for commercial applications."

Wireless transmissions allow audio and video signals to be sent via wireless data networks (or between two devices using wireless data network communication protocols). This eliminates the need for some cabling infrastructure and rides on the familiarity of mobile devices like mobile phones. This is a large step in the direction towards easy collaboration, interactivity between mobile and installed devices, and user familiarity; however, this is a giant technological leap for the AV industry.

One of the largest challenges simply has to do with the fact that this data must ride on a data network, which has traditionally been outside the AV domain until recently. Needless to say, us AV folks have had to become good friends with our client's IT departments recently in order to ensure that both the data and AV systems remain functional and secure.

Currently there are some limitations to wireless transmission in regards to audio visual devices. These include:

- The maximum video frame rate and resolution for wireless video is lower than what most people are used to seeing at home or on native files on their portable devices.
- The video signal is compressed significantly when sent wirelessly. This further reduces the quality of the image.
- There are a limited number of simultaneous users and devices that can be supported. In other words, when two different mobile devices from different manufacturers try to stream to/from each other, the viewing experience may be unpredictable.
- How each wireless device interacts with a building's data network can vary greatly depending on how the network is configured.

Using a mobile device to stream sustained high-bandwidth data is problematic for most IT departments from a security standpoint. Streaming also uses a significant amount of network bandwidth. The solution is careful and vigilant creation and management of subnets, VLANs, device authentication, and bandwidth guarantees/caps via quality-of-service settings to reserve the needed streaming bandwidth without broadcasting the signal unnecessarily to irrelevant nodes and causing network "traffic."

A good question to ask when considering a wireless technology is: *What is your risk tolerance?*

If tolerance for network risk is acceptable for streaming wireless technologies over their network, then the follow-up question would be: *Is the success of the presentation less important than running a cable?*

In knowing this information, a design can be tailored to suit individual needs.

Trend #5 Video Walls are here to Stay

Although it is not a new technology, the ongoing trend of having large visible images is here to stay and is increasing by the year. With the emergence of interactivity (found in trend #6), the desire to have video walls that interact with users has increased. However, this isn't to say that passive (non-interactive) video walls are on the wane, they too are increasing in popularity.

Video wall display options these days range from thin and ultra-thin bezel display arrays to blended rear projection displays. Most are still custom assemblies since there is no off-the-shelf video wall product that meets everyone's size, shape, resolution, and cost requirements.

What is improving in this arena is the distance between pixels (a.k.a pixel pitch) for the very-bright outdoor-grade LED screens. These distances are about 25% of what they were just a year or two ago, which allows for a much sharper and brighter image for these applications. It also means that smaller displays of this style can be built while still

Trend #6 Interactive Digital Signage and Kiosks

Interactive touch screens can help a user navigate and gather information about anything from a high-rise office building map to a bustling large airport. This technology is a rising star in how it can communicate a large amount of information quickly and visually to a user without requiring them to type, use a mouse, or speak. Touch screen display menus can now be customized in regards to its display orientation, how the information is presented, and an array of other options to enhance the user's experience.

Interactive technology is becoming more mature and more precise as the years go by. A recent improvement for interactive displays is called Multi-touch. Multi-touch, or using several points of contact with the display surface to modify and access the on-screen information, is all too familiar with users already because it's used on every smart phone. This technology is becoming ubiquitous on interactive flat panel displays and will continue improving for years to come.

We're seeing display companies handle the "interactivity" part of the display differently. Some use an internal small-format PC that's built into an expansion slot, others use an external display that is located near the display, and a few are starting to build this ability into their "smart" display features so that they can show wireless video information from a remote PC. This last technology is not yet mature enough for most designs though.

Thank you for your interest on current and future AV trends. We're sure they will continue to change and improve over time according to the needs of the users and the abilities of the technology. It is what keeps the AV industry exciting for designers and users alike. For one, my hope is that Heraclitus is right and that this never changes—or that it always changes!

To find out which audio visual technologies are right for your organization or client contact PlanNet today.