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## **AV for IT: Convergence Myth Perceptions**

*Understanding why is it so challenging to get AV designed properly in a hotel*

By Jeff Loether



There is a lot of buzz about AV and IT “converging,” and there is some confusion as to what this really means. It seems as though IT is taking over everything with the Internet of Things (IoT), including telephones (VOIP), television (IPTV), and now even the AudioVisual realm. Where the AV systems in a hotel were once the responsibility of the Engineering Department, they now more often fall under the IT department because technology is technology – right? Wrong. There are distinct differences between these two disciplines, and due to the differences between IT and AV, the two worlds will never fully converge; rather, they will stay stuck at 20 percent convergence. Here’s why . . .

Think of the classic systems approach to technology: Input – Processing – Output. With telephones, people continue to talk on phones that transmit or communicate with other telephones over IP transport platforms. While input and output remain the same, the transport has changed from analog wiring to digital streams. The same is true for TV. The processing and transport has shifted to a digital domain, but the input (actors, cameras, lights, etc.) and output (human audience/viewers) remains the same.

Telephones and televisions are pre-engineered, off-the-shelf components that simply plug into a broadband network. All network designers need to do is identify which device goes where, and get the signal to those devices; plug, configure, and play. This holds true for all sorts of devices, from interactive kiosks, workstations, and point-of-sale terminals, to telephones, intercoms, security cameras, door locks and more. This type of “terminal equipment” can easily be spec’d and installed by network designers.

### **Shattering Myth-Perceptions about AV and IT**

But enter the AudioVisual / Presentation Technology arena. The transition from different types of dedicated, proprietary cabling for different signals to transporting all sorts of signals across “converged” broadband digital networks is where we find the AV and IT convergence. Converting these once analog signals to digital has enabled network engineers to design systems that were previously designed by audiovisual consultants and telephone consultants and television (MATV, CATV) consultants. And the Myth-Perception is that network engineers can now also design audiovisual systems; not so well, as it turns out.

Audiovisual systems for meeting and training rooms and ballrooms, whether in hotels or private training facilities, are different. They are not off-the-shelf components that are plug-and-play. Microphones and speakers and displays and projectors are discrete components, not pre-packaged products. Think of it this way: the network engineer designing a telephone system does not have to calculate the distance from the user's lips to the microphone, or the distance from the speaker to the user's ear; these are pre-engineered in the telephone. The audiovisual designer certainly does have to consider these factors during the design of the ballroom and meeting room sound systems, or the system will not work.

Discrete AudioVisual components are "analog transducers" because the people that are meant to hear and see the sound and images they produce are not digital beings. While they may be connected using digital cabling, their functions involve converting analog phenomenon to electrical or digital signals (ie: patterns of light for cameras and sound waves for microphones). Likewise, digital and electrical signals are converted to sound through speakers and images/patterns of light through video projection and displays.

### **The Analog (AV) vs. Digital (IT) Difference**

Analog challenges cannot be solved -- and analog systems cannot be designed -- using digital thinking. Digital is defined by parity checking: ones and zeros, black and white, on and off, works or does not work, etc. Analog is convoluted and expressed in technicolor, with infinite variation and potential. Both analog (AV) and digital (IT) disciplines are complex, but in different ways; they use a diverse vernacular and have a dissimilar discipline requiring an alternate set of skills and interests. We call this field of practice: "ArchiTechnology."

Since the physical spaces are not pre-engineered off-the-shelf components, designers must consider analog factors that affect the effectiveness of:

1. Cameras, including field of view, glare from surfaces, patterns in (and colors of) surface coverings, reflectivity of surfaces, contrast in field of view, motion of subjects and/or objects in or behind field of view, depth of field relative to light levels, and depth of subject matter, color temperature and evenness of light sources, vibration of camera and projector, etc.
2. Displays, including reflectivity or glossiness of display surface, angle of view relative to sources of light (windows, lighting features), distance of the display to the nearest and furthest viewer, nature of the content, etc. Failure to anticipate and properly design around these factors can result in systems that fail to perform or satisfy.
3. Sound Systems, including distances from microphone(s) to talkers' lips, speaker(s) to listeners' ears, and speaker(s) to microphone(s). Also, vibration and background noise levels, reverberation in the room, reflectivity of surfaces near the microphones or speakers also affect the effectiveness of sound systems. Of course, the specific characteristics of the microphones and speakers also must be factored into the designs.

### **The Analog Room + Analog Users/Audience**

AudioVisual design is a holistic discipline. Instead of simply plugging in "terminal equipment," such as telephones and televisions, POS terminals and kiosks, the entire room and the AV elements contained within it become the end point. The room itself is an analog environment. Physical dimensions, surfaces and angles, aspect ratios, etc., are analog phenomenon.

Not only are AudioVisual components analog, but so are the users of the systems; humans are analog by nature. We do not perceive digital signals directly. Our eyes and ears and other senses detect changes in the analog environment. We have a wide range of sensitivities to sound and light. Factors such as culture, age, native language, exposure to damaging noise, eyesight acuity, stress levels, training, etc., all affect how well users are able to hear, see, and interpret the analog information being presented by the AV systems.

Therefore, the analog room affects the performance of analog AV equipment, and the sensitivities and experience of the analog users. We cannot fix an unfriendly room using technology. Analog interactions (and interferences) will happen whether intentional or consequential.

As we focus on designing ballrooms and meeting spaces that provide event technology to enhance the customer experience, we as a by-product will also be making these spaces even better for human participants. Why? Because the event AV technology is even more sensitive to inadequate lighting or unwanted noise from HVAC systems or adjacent spaces than humans are.

In review, the convergence of telephones and televisions to the IT and digital domains were fairly straightforward in that (1) point-to-point transmission changed from analog to digital, and (2) telephone and television equipment attached to the distribution of the systems is pre-engineered and off-the-shelf. While point-to-point transmission of AudioVisual signals is progressing along the path toward digital, the design of AudioVisual systems goes beyond network and terminal equipment and includes the room and users as well. The design of AudioVisual systems requires an intrinsic and deep understanding of human factors, architecture, physics, light, and of course the AV equipment itself. It requires an expert skilled in the practice of "Archi-technology."

### **Don't Make False 'AV = IT' Assumptions**

Expecting that your IT design team can properly implement mission-critical AV systems is an unfair assumption. Good AV design involves far more than the network itself. There are many resources available to explore this new world. [InfoComm](#) has the most well developed education and training programs for AudioVisual systems. Working with an experienced independent AV consultant directly will serve as an excellent resource. True Independent Consultants are not driven by sales commissions, and therefore they see the situation more holistically.

Until analog humans sprout Bluetooth antennas, we will continue to have analog experiences in a digital world. The convergence of AV and IT will be paused at the digital/analog threshold.

### **About Jeff Loether**

*Jeff Loether is president and founder of ELECTRO-MEDIA DESIGN, Ltd., an AudioVisual systems design and Acoustical consultation group with expertise in audio, video, control, and related presentation, entertainment, and communications technologies. The practice also includes AudioVisual Operational and Management consulting to address the entire AV systems lifecycle. As independent consultants over the last 25 years, EMD has provided consulting services for more than 800 projects globally, including: hotels, conference and convention centers, spas and resorts, government facilities, corporate board rooms, theaters and auditoria, schools and electronic classrooms, training and meeting rooms, courtrooms, places of worship, restaurants and nightclubs, sports facilities and venues, and command and control centers.*