



# THORBURN ASSOCIATES

## ACOUSTIC AND AUDIOVISUAL CONSULTANTS

eNEWSLETTER January 2004

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### 1. Greetings

We hope this finds you happy, healthy, wealthy, and wise as we move into the New Year! This is the second edition of our eNewsletter. Let us know what you think; our goal with the eNewsletter with the newsletter is to provide useful information in a timely manner and readable format!

As always if you have an idea, question, suggestion please drop us a note at [TA@TA-Inc.com](mailto:TA@TA-Inc.com) for general information or [eNews@TA-Inc.com](mailto:eNews@TA-Inc.com) for specific comments about our eNewsletter.

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### 2. ICIA Course offerings at IPD Memphis 2004

Plan to attend the Institute for Professional Development (IPD) Feb. 7 to 10, 2004, in Memphis, Tennessee. IPD courses are intensive training for AV professionals and have been an industry tradition for more than 35 years. These hands-on classes are led year-round by audiovisual experts allowing participants to answer questions and explore new concepts while building on much-needed professional skills.

In Memphis, ICIA is offering five, four-day courses:

- Project Management for the AV Industry is a formal introduction to project management and how it can be applied to the AV industry with an investigation of project management terms, the partnering process, people skills, team building, the roles of the project manager and project documentation among others. Instructor: Steve Thorburn, PE, CTS-D, CTS-I. and Lisa Thorburn, CTS.
- Streaming is designed to cover the technical and logistical aspects of streaming including casting, unicast, multicast, broadcast, anycast; crossover technologies; critical protocols; videoconferencing; and MPEG2s, MPEG4 and MPEGs. Instructor: Scott Sharer, CTS.
- Professional Staging Sales Skills is a staging workshop for the serious sales account manager, featuring classroom exercises with a focus on sales cycles, differentiating your company from other providers, creating dramatic sales, managing accounts for maximum results, and much more. Instructor: Bill Sharer, CTS.
- All About Audio provides a solid foundation in audio fundamentals including room acoustics, equipment, teleconferencing issues, feedback control and equalization, basic system design and understanding levels (both acoustical and electrical). Instructor: Gordon Moore, CTS.
- Lighting for Video Teleconferencing and AV Presentation Spaces teaches the AV designer how to design basic lighting systems for video teleconferences and AV presentation spaces with discussions about costs, codes, ceilings systems and other practical considerations. Instructors: Jim Yorgey, PE, LC, and Jim Benya, PE, LC, FIES.



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Steve and Lisa Thorburn developed the IPD course “Project Management for the AV Industry” as an introduction designed specifically for AV professionals. Over the last three years it has become one of the most popular IPD courses. The course introduces the formal structure of project management and how it can be applied to the audiovisual industry. Participants learn: the process of project management and review the terms; Review the general construction project management process and compare it to the audiovisual industry; Build upon this foundation using forms and checklists that can be tailored to apply what is learned from the session for in-house use; Examine the use of timelines, commercial software packages and custom software tools.

Guarantee your seat for the Memphis IPD today. Register by contacting an ICIA training counselor at 703.273.7200 or 800.659.7469.

*ICIA is a registered Provider for AIA ceu's.*

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### 3. Speech Privacy Within Hospitals Meeting the New HIPAA Standards

Confidentiality between a patient and the health provider is one of the basic principals of modern health care. Without confidentiality, the effectiveness of the health care system decreases, due to patient fear of having their medical records revealed and possibly used against them.

In 1996, Congress passed the Health Insurance Portability and Accountability Act (HIPAA) with the final wording of the Act being approved last year. The Act is designed to increase the patient's privacy and ease of obtaining their medical records. The US Department of Health and Human Services is responsible for regulating the Act. Violations of the Act can be punished by fines and/or criminal sanctions as well as be subject to civil lawsuits.

Meeting the HIPAA Standards requires specialized computer systems and staff training, among other changes to the hospital operations to protect the patient's medical records. It also places additional consideration on the architectural design of the medical facility. There is now a legal obligation to provide speech privacy between the patient and the health care provider, especially in key areas, such as in Treatment/Exam rooms, and in Admission areas.

Speech privacy between two spaces can be measured using methodologies such as the Articulation Index (AI). The AI is a measure of speech intelligibility, with a value from 0 to 1. A “1” indicates perfect speech intelligibility, while a “0” indicates perfect speech privacy. Typically, AI ratings of 0.2 or less are appropriate for medical system speech privacy.

Providing “confidential” speech privacy in medical environments demands that careful attention be paid to many aspects of the design. The common walls between patient consultation areas and the rest of the hospital must be constructed to sufficiently reduce sound transfer between the spaces. Plumbing and electrical penetrations in the common walls can reduce the sound isolation and must be addressed. Suitable doors must be selected and properly gasketed. The HVAC system must also be designed to prevent cross-talk and other ductwork related noise transfer problems.

In addition to good sound isolation between areas, the background noise must also be of an appropriate level – too quiet, and sounds from one space will be more easily heard; too loud, and people will raise their voices during conversation. When the background noise level is too low, a sound masking system can be installed to create a higher level of inoffensive background noise. This, in fact, was a solution Thorburn Associates employed on a recent counseling center project in which the counseling room common walls were not full height.

Thorburn Associates is currently working on several medical facilities and has a wealth of experience dealing with speech privacy issues. Please feel free to contact us with any questions you may have. The HIPAA Standards may be viewed at: <http://aspe.hhs.gov/admsimp/index.shtml>.



## 4. Presenting the Perfect Picture

Think about the last time you were at a presentation where it was difficult to see the images being displayed. While there was nothing wrong with the presentation equipment or the quality of the installation, something was still not quite right. That something detracted from the presenter's ability to communicate their message. When we are asked to look at spaces with this problem, we find it is almost always the size of the image on the projection screen. The ability to see the presenter and their material is critical for a successful presentation environment. This includes addressing the size of the image on the projection screen or monitor, proper viewing angles, and careful planning and design of the display location.

### Image Size

The most common problem here is that the image is too small. The standard rule of thumb for sizing images is the four six eight (4-6-8) rule. This means the furthest viewer should be no more than 4, 6, or 8 times the image height away, depending on the material being viewed. Conversely, if you know the furthest viewer is 60 feet from the image then the screen should be 15, 10 or 7.5 feet high respectively based on the 4-6-8 rule.

The 4 factor is used when we need to inspect the image, such as a CAD drawing or a fine detailed map that requires close inspection. The 6 factor is used for reading or detailed viewing, such as spreadsheets or text with images. This is the most common size for presentation environments. The 8 factor is used for general viewing, watching a movie or images with few words. The 4-6-8 rule is derived from studies showing the minimum symbol height (i.e. text) the human eye can resolve along with a factor to account for viewers of varying visual acuity and varying viewing angles. No matter what the material, if you are doing a presentation, the 4-6-8 rule can be applied. Once the image height is known, the aspect ratio determines the screen width. There are many different aspect ratios for displays, the two most common aspect ratios we find are for video and HDTV. For traditional video displays, the aspect ratio is 4:3 (i.e. 4 units wide by 3 units high or 1.33); for HDTV displays, the aspect ratio is 16:9 (i.e. 16 units wide by 9 units high or 1.78). So the 10 foot high image mentioned earlier would be 13.3 feet wide for a traditional video display and 17.8 feet wide for an HDTV display.

### Viewing Angle

The preferred viewing angle has the audience no more than 45 degrees to each side of the center of the image, or within a 90 degree "viewing cone" centered on the image. This cone can be expanded to 45 degrees off the edge of the image for acceptable viewing areas. Using the aspect ratio above, you now know the width of the image and can determine the acceptable viewing area. So between the 4-6-8 rule and the viewing cone we have established that the acceptable and preferred viewing areas in any room have a direct relationship to the size of the image.

### Screen Location

We know how large the image should be but how big should the screen be? How high should it be off the floor? How far below the ceiling? Well, all of this depends on what or who may be blocking your view. If a short viewer can be seated behind a tall person, we have to either raise the screen, staggering the seating, or if in an auditorium, slope the floor. When you arrange the seats to create a greater distance between the viewer and the head directly in front of the viewer, you can lower the minimum height of the projection screen. Using a sectional drawing with tops of heads and eye locations drawn in (average top of head at four feet and eye at 3 feet 6 inches), you can quickly determine how high the projection screen needs to be off the floor to allow everyone a good view of the screen. In the end the solution will be a compromise, but we have found for most spaces the bottom of the screen is at 42 inches above the floor, and the top of the screen is no closer than 6 inches to the ceiling.

Ultimately there is no perfect solution to every presentation environment. But it is important to think about the presentation space and create a design that allows everyone to *see and hear* the presenter and their material with the least amount of difficulty. Combining a well-planned room with a good technical design equals a great presentation environment every time.

## 5. UNCA Highsmith Student Center

University of North Carolina - Asheville, Highsmith Student Center, Asheville, NC  
Architect: Lee Nichols Clark Patterson



Located in Asheville, NC is the new 73,920 square foot Student Center for the University of North Carolina - Asheville. The project is a renovation and expansion of the old student center originally built in the early 1980s. The new design is very open, with high ceilings, and is filled with natural light. Most of the rooms are open to the structure above, to a height of up to 30 feet in divisible meeting rooms and lounges. The expanded student center will house offices for the student government, bookstore, food court, pub, post office, and university newspaper to name a few. The project is expected to be completed by the summer of 2004.

Thorburn Associates is pleased to be providing audiovisual consulting and wireless network infrastructure for this "bar raising" project. Key spaces include a meeting room divisible into 4 separate rooms; 3 additional stand alone meeting rooms; 2 conference rooms; a Pub for live performances (small ensembles, stand up comedy and open microphone style acts) and a Multipurpose room equipped with a 7.1 surround sound system. Throughout the facility a digital bulletin signage system will be utilized.

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## 6. Loudspeaker Technology

Over the past few years, thanks to digital signal processing, audio designers have been able to develop arrays of loudspeakers. By grouping loudspeaker boxes with special signal processing the coverage area can be changed and controlled. This type of design can help minimize reflections off of walls at a concert or to direct sound to a specific point in a stadium for sporting events. The drawback is that these arrays are very large and do not easily fit into rooms smaller than 5000 seats or so. Recently, loudspeaker manufacturer EAW has released the new Digitally Steerable Array, or DSA™ Series designed for use in small to mid-sized permanent installation applications. The DSA Series permits the steering and aiming of a loudspeaker's output and adapts it to applications where a column array loudspeaker design would be beneficial.

In a DSA Series loudspeaker, each driver enjoys its own individual amplification and digital signal processing (DSP) that is controlled using EAW's DSA Pilot software program. Users can vary the vertical coverage pattern from 15 to 120 degrees wide as well as aim the coverage  $\pm 30$  degrees. Each DSA loudspeaker delivers a fixed horizontal coverage pattern of 120 degrees. This wide-angled coverage allows for wide horizontal spacing between DSA modules in an installation.

In addition, the DSA loudspeaker has internal power amplification and 16 channels of complex digital signal processing that includes delay, equalization and limiting. Users only need to connect AC power, audio signal, and network communication cables. While it is not something we will use in every job, it is a product that definitely fills a niche when space is at an absolute premium.

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