



**PAMA**

Professional Audio  
Manufacturers Alliance

Half Moon Bay

November 3, 2010

**STANDARDS ARE EVERYWHERE!**

Joe Bocchiaro

InfoComm International

# TODAY'S DISCUSSION

- Audiovisual Performance Standards Development
- Audiovisual Standards
- Audiovisual Best Practices
- Emerging Issues / Partnerships under consideration
- Amplified Audio System Performance Standards “Suite”
- Energy Management
- EnergyStar
- ISO 14001 and EMS
- ASTM APEX
- The Future
- PAMA Discussion

# DID YOU KNOW?

- Approximately 500,000 technology standards are the technology foundation for the global economy
- It costs at least \$1.5 billion each year to maintain the global standardization system
- Widespread participation and standard adoption advances industry sector professionalism and stimulates trade

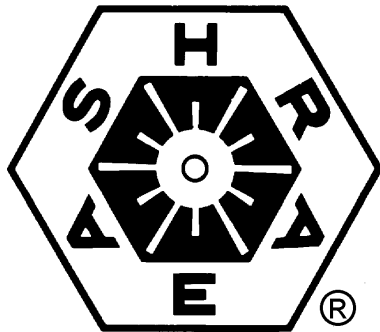


## TYPES OF STANDARDS

- Basic
- Data
- Interoperability
- Management
- Material Specifications
- Process
- Performance
  - InfoComm is currently focused on developing Performance Standards
- Product
- Service
- Standard Practices/Guides
- Standard Terminologies
- Testing



- Architects and Engineers utilize standards in many aspects of their designs....

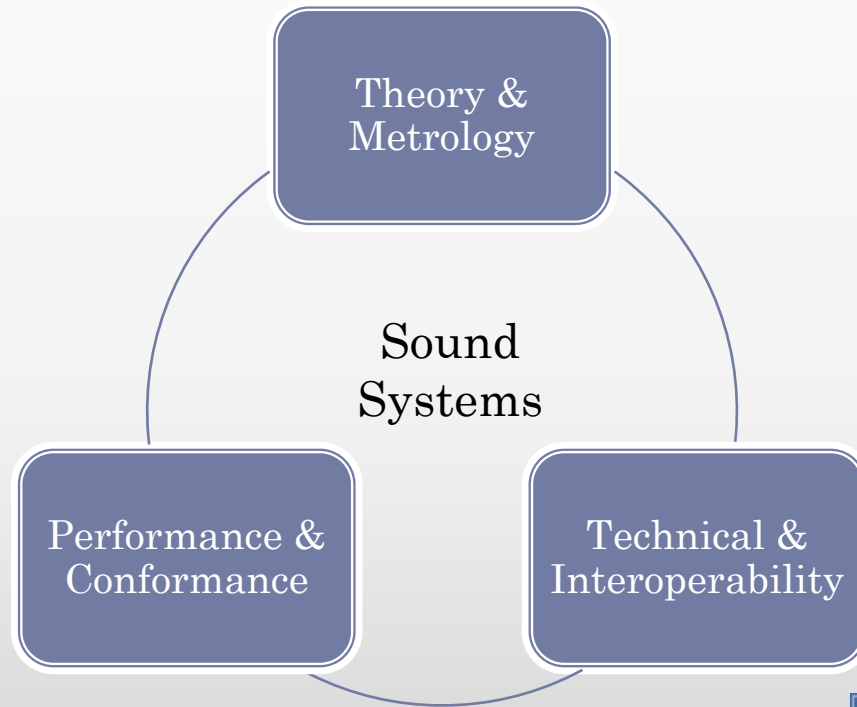




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# AUDIOVISUAL INDUSTRY UTILIZES TECHNICAL STANDARDS FROM ELSEWHERE





**Board  
Discussion  
of  
Standards  
2004**

**ANSI  
Accredited  
Standards  
Developer  
2008**

**InfoComm  
Joins  
ASTM 2010**



**Standards  
Program  
established  
2006 – 2007**

**First  
standards  
completed  
2008/2009**

**First ANSI  
Program  
Audit  
completed  
10/10**



## ANSI/INFOCOMM 1M-2009

### ANSI/INFOCOMM 1M-2009

#### Audio Coverage Uniformity in Enclosed Listener Areas

#### InfoComm International Performance Standard

2009-11-08



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#### Abstract

One of the fundamental goals of sound system performance for both speech reinforcement and program audio is the delivery of uniform coverage in the listening area. A well executed audio system design is one that allows all listeners to hear the system at approximately the same sound pressure level throughout the desired frequency spectrum range, no matter where positioned in the designated listening area. This standard provides a characterization of and a procedure to measure this spatial coverage, with criteria for use in the design and commissioning of audio systems.

#### Keywords

ACU, Audio Coverage Uniformity, Audio System, Critical Distance, Listener Area, Sound Pressure Level, Sound System, Spatial Coverage, Uniformity

#### Disclaimer

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## ANSI/INFOCOMM 2M-2010

### ANSI/INFOCOMM 2M-2010

#### Standard Guide for Audiovisual Systems Design and Coordination Processes

#### InfoComm International Standard

2010-12-05



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#### Abstract

A successful professional audiovisual system installation depends on the clear definition and coordination of processes, resources, and responsibilities of the design and installation project teams. A properly documented audiovisual system provides the information necessary to understand and implement the system goals and project requirements in a logical and efficient manner. The documentation should complement and coordinate related architectural, engineering, and construction documentation. This standard outlines a consistent set of the standard tasks, responsibilities, and deliverables required for professional audiovisual systems design and construction.

#### Keywords

Audiovisual, AV system, AV design, AV documentation, AV infrastructure, MasterFormat™, construction documentation, best practice, AV installation, InfoComm

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- Videoconferencing Lighting
- Projected Image Systems Contrast Ratio
- Audiovisual Systems Energy Management
- Sustainability in Event Management
- Audiovisual Systems Drawing Symbology
- Display Image Size In Audiovisual Systems
- Audio Systems “Suite” of Standards



- BIM (Building Information Modeling)
  - Database Format for Audiovisual Equipment
  - InfoComm iQ Distribution
  - Accompanying Guidebook

- STEP Rating System:



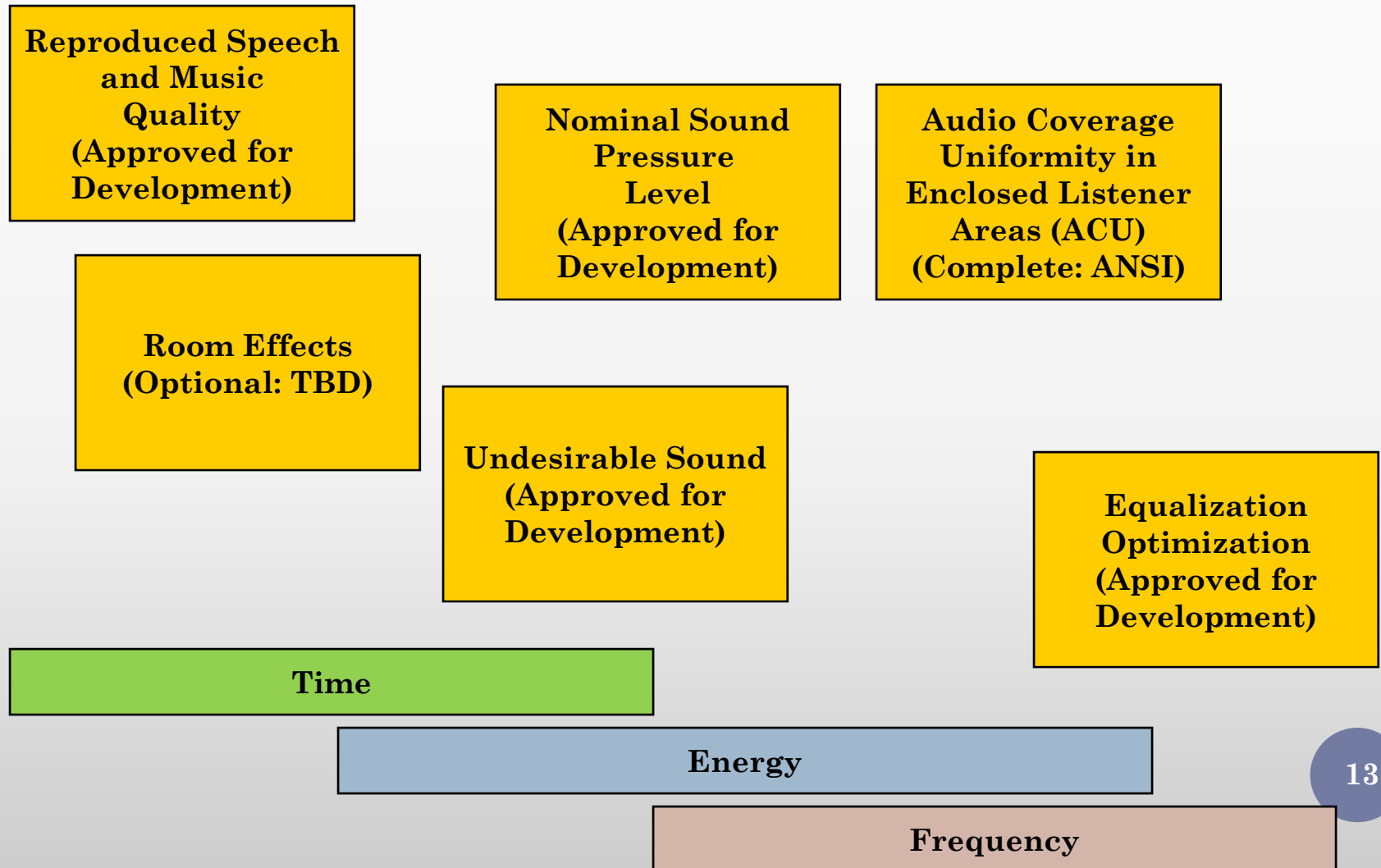
- Parallel to LEED: Points accrued and project certified
- BIM Part 2: 2011
- Integrated Building Technologies: 2011
- Other New Projects TBD: 2011





# EMERGING ISSUES/PARTNERING STANDARDS UNDER CONSIDERATION

- ISA/NFPA/IES/ASHRAE/INFOCOMM: Unified Building Automation Technologies (UBAT)
- ISA 60 Command and Control Displays
- ASHRAE 201P SmartGrid (representation only)
- Load Prioritization in Automated Demand Response Systems (Smart Grid)
- NFPA 72 National Fire Alarm and Signaling Code
- Classroom Acoustics Part 4: Sound Reinforcement (ASA / LEED)



# AUDIO COVERAGE UNIFORMITY IN ENCLOSED LISTENER AREAS

One of the fundamental goals of sound system performance for both speech reinforcement and program audio is the delivery of uniform coverage in the listening area. A well executed audio system design is one that allows all listeners to hear the system at approximately the same sound pressure level throughout the desired frequency spectrum range, no matter where positioned in the designated listening area. This standard provides a characterization of and a procedure to measure this spatial coverage, with criteria for use in the design and commissioning of audio systems.

Sound Pressure Level Optimization in Audiovisual Systems: The nominal audio signal level in an audiovisual system is referenced to the level of ambient acoustic noise in the venue. This standard would characterize this ambient noise, recommend a signal-to-noise ratio for different venue types, and provide measurement techniques using common test equipment. The standard might also refer to maximum sound pressure levels acceptable for audience safety.

Audio system equalization best practices have been established by a variety of references and have been available to the industry for a number of years. This standard will describe the performance requirements for audio system equalization for a variety of venues within enclosed areas, and provide a method for achieving an equalization of an amplified audio system to optimize the resulting performance in the room environment. Note that this standard will apply to both music reproduction systems, which require a full frequency spectrum, and speech reinforcement and/or emergency notification systems, which have a more limited frequency range.

Audio amplification system performance is degraded when unwanted sound elements are generated within and caused by the system. These elements are 1) electronic noise introduced by elements of the system electronics, often called hum or distortion and other unwanted electronic artifacts; and 2) acoustical noise, such as physically introduced noises from the vibration of components of the amplified audio system. This standard will set an acceptable threshold for unwanted sound elements of an amplified audio system, and describe the method for testing of the amplified audio system as well as the method of documentation to demonstrate that the unwanted sounds are not evident while the system is operating. The standard would describe the measurement of the audio signal as compared to the noise level of the system. This standard is not intended to measure the acoustics of the space, nor does it intend to compare the performance of the system to the environment.



# REPRODUCED SPEECH AND REPRODUCED MUSIC QUALITY

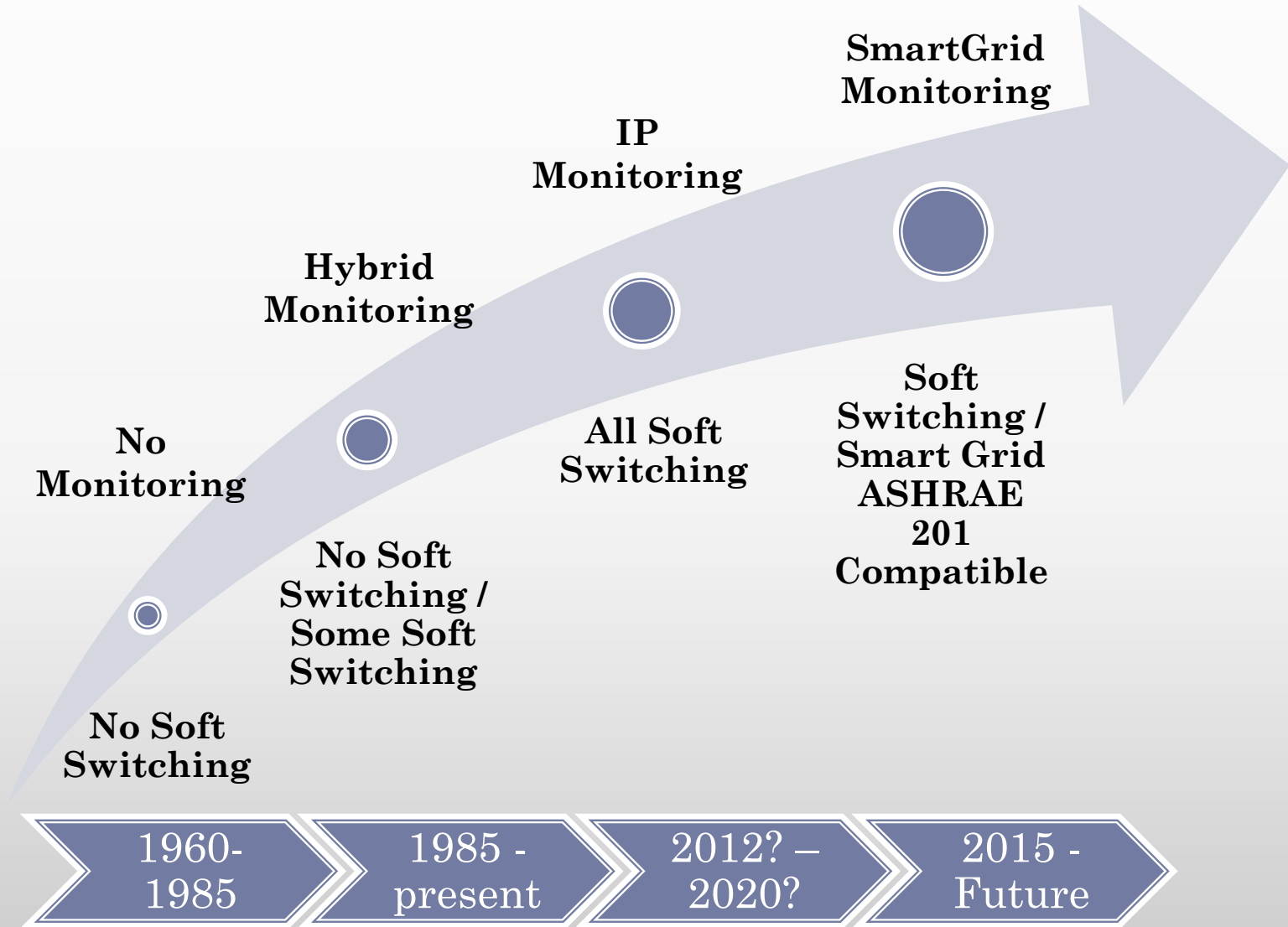
This standard proposes to address the minimum acceptable levels of speech quality and reproduced music performance quality for amplified audio systems from the perspective of time-domain acoustical parameters. The standard should incorporate currently accepted methods for acoustical measurement of the system to determine minimal acceptable levels of speech sound clarity/quality and music performance reproduction quality.

# Audiovisual Systems Energy Management Performance Standard

- Power Factor (not straight kWh)
- Power States for SYSTEM
- Baseline of System: All On, All On w/Display Off
- Room Functions On (Presentation, Trial, VC, etc.)
- Power Consumption Monitoring and Reporting
- Behavior Modification

*If it's not being used, turn it off!!*

# Power Switching and Monitoring Capabilities Timeline



- In order to participate in ISO standards development, or to create an ISO standard, InfoComm must join with other Standards Developers and work through ANSI, the ISO member
- A TAG (Technical Advisory Group) must be formed by the delegate organization to ISO



- The Version 2.0 Audio/Video specification was developed through a process that included release of a specification framework, three draft specifications plus supporting documents such as a proposal for audio amplification, four stakeholder meetings, and continuous input from stakeholders.
- Version 2.0 specification establishes On mode and Sleep mode power consumption requirements, and requires that an Auto Power Down feature is enabled on all products by default.

- An EMS (Energy Management System) gives an organization a systematic approach for managing their environmental impact (the consequences of their operations).
- The objective is for ISO 14001 to control environmental impact of the organization's actions and continually increase the environmental performance as measured against objectives.

## WHY IMPLEMENT ISO 14001?

- Many organizations decide to Implement ISO 14001 and obtain registration because it assures customers, shareholders, suppliers, regulators and the community at large that the company has a good Environmental Management System (EMS) in place. An organization with an effective EMS will typically meet customer expectations and comply with regulations better than an organization that does not have an effective EMS. Many organizations require their suppliers to have ISO 14001 Registration.

## **Standard Specification for the Evaluation and Selection of Audio Visual (AV) and Production for Environmentally Sustainable Meetings, Events, Trade Shows and Conferences**

### *4.2.7. Procurement and Environmental Purchasing*

4.2.7.1. The supplier [AV contractor] shall enforce environmental criteria for selecting equipment manufacturers that have at least one of the following:

- Restriction of Hazardous Substances Directive (RoHS) compliance
- ISO 14001 certification
- Manufacturing facilities powered in part or in whole by one or more alternative energy sources
- EPEAT, or similar recognized, formal system for evaluating and reporting the environmental performance of electronic equipment
- Formal enviro-packaging policy
- Sponsorship or participation in formal product take-back/recycling program

# THE FUTURE?

## Groups of Standards

- Audio
- Visual
- Control, Power, IT

## Synergistic Room Technology

- A/V, Lights, Shades, HVAC
- Audiovisual Control System
- Occupancy and Power Monitoring

## Artificial Intelligence Audiovisual

- Adaptive Control Systems
- Energy Management

## Outreach

- Architects, Engineers
- Facility Managers, Commissioning Agents

## Training and Education

- Manufacturers
- InfoComm
- Colleges and Universities

## WHAT MANUFACTURERS CAN DO

- Be aware of current and emerging standards (InfoComm bi-weekly news)
- Purchase the standards when available
- Assign an engineer to learn- and teach-the standard to your firm (InfoComm will hold webinars and seminars to help with this)
- Inform your clients about the standard: use your knowledge as a market advantage and a sign of your professionalism
- Encourage your employees to participate in standards development- willingly
- Develop whitepapers and application guides for your products to teach how to apply products to designs that conform to standards
- Publicize your successes with the standard: everyone is involved in educating architects and engineers





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Thank you for your Support!

*Standards Planning Committee*

Interested in Participating in InfoComm Standards?  
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