

AES BUDAPEST 2012

Saturday 28 April 16.00h

SDCTV session, chairman Brian McCarty

*Topic : “Implications of Standards changes in Cinema Sound
on DVD and Home theater”*

“ Importance of compatibility between Pro Cinema & Home Cinema audio standards”

By Wilfried Van Baelen (CEO Galaxy Studios, Auro Technologies)

Background Info

HISTORY

- Cinema Industry was in the past leading about setting audio standards
- Stereo (1934), Surround (1941) -> WHAT IS NEXT ?
- Dolby 7.1 seemed not to become the next gen standard -> WHY ?

TRENDS & FACTS

- Other AV content markets became much bigger than Cinema -> Games, Broadcast...
- Interactivity (realtime operation) is gaining importance : issue -> latency of lossy codecs
- Too many uncompatbile distribution formats & codecs -> need for more compatibility
- “Back to PCM” -> HDMI, BluRay, DCP, Game engines, Broadcast ...

Home Cinema is gaining market ... = power

WHY A NEW AUDIO STANDARD FOR CINEMA ?

- Exhibitors interested in a new experience that can not be achieved at Home ... (yet)
- Exhibitors want to keep their extra revenue on tickets (cfr Stereo 3D) using 3D Audio
- Exhibitors want to differentiate themselves -> added value to attract customers

BUT... WHAT ABOUT HOME CINEMA **DRIVING** THE CINEMA STANDARD ??

- 3D Audio at Home : better immersive experience (localization) with much less channels
- 3D Audio by Games & Broadcast (nr.1 content makers) -> more influence than Cinema ?
- Cinema shouldn't make the mistake to think they have still the same power as before
- Importance of alternative content (with 3D Audio) ... MISSION = BE COMPATIBLE !
- If Cinema standards are too 'isolated' from Home standards -> VERY RISKY FUTURE !

Home Cinema Market

WHICH 3D AUDIO SETUP IS '***MOST EFFICIENT AT HOME***'?

- How many channels necessary ? -> Each channel cost money...
- Ceiling channels (right above listeners' head) -> in most cases not an option !
- Height channels "around" the listener to get full immersive 3D Audio experience
- FULL Backwards compatibility with 5.1 Surround setups and formats (DVD, Blu-Ray)
- Compatibility with other CES -> cars (VOG channels not possible), mobile, headphones

'***WHAT IF***' NEXT GEN CINEMA CONTENT IS LESS IMMERSIVE AT HOME ?

- If Cinema 3D Audio standards & content have bad compatibility with Home 3D Setup ?
- Exhibitors will get the opposite effect from what they hoped to achieve with 3D Audio !
- Conclusion -> a good detailed study of "compatibility" is KEY for CINEMA INDUSTRY !!

Compatibility between Pro Cinema & Home Cinema

◆ FINANCIAL / ECONOMICAL

- ✧ Is key parameter for all people involved in content creation up till consumers

◆ EASY COMPATIBILITY between ALL CONTENT FORMATS & MARKETS -> MUST ?!

- ✧ All kind of content playable on Pro Cinema, Home Cinema, Cars, Mobile devices
- ✧ Alternative content for Pro Cinema becomes very important
- ✧ 81% of revenue of Movie industry is not coming anymore from ticket sales

◆ HOW TO ACHIEVE MAXIMUM COMPATIBILITY BETWEEN BOTH ?

- ✧ “Professional” (large rooms) versus “Consumer” (small rooms)
- ✧ DEFINE these PARAMETERS -> detailed investigation necessary !

◆ HOW IMPORTANT IS THAT COMPATIBILITY ?

- ✧ Determines the integration and easy acceptance of a new 3D audio standard

“ COMPATIBILITY ” = KEY !

The HIGHER the “Compatibility” => The BIGGER the “Standard”

- ◆ THE MORE COST SAVINGS for Content Makers
 - ✧ *Production up till distribution from Movies, Games, Broadcast..*
- ◆ THE MORE COST SAVINGS for Post Production Houses
 - ✧ *Investments, Workflow, Efficiency, Reliability ..*
- ◆ THE MORE COST SAVINGS for Consumers
 - ✧ *Upgrade model on existing setup + “single inventory solutions”*

“Compatibility” = driving the other ‘decision making parameters’ :
quality, financial, flexibility, speed, easy

“Decision Making Parameters”

Listening Formats

COMPATIBILITY

QUALITY

FINANCIAL

EASY SETUP

Technical Solutions

COMPATIBILITY

QUALITY

FINANCIAL

FLEXIBILITY - SPEED - RELIABILITY

“Compatibility”

Listening Formats

- Backwards with 5.1 standard
- Between 3D Audio Speaker Layouts
- Channel based versus Object based
- Theatre, Home, Cars, Headphone
- Between Mix Stages and Theatres
- Loudness issues (dynamic range)
- **Creative control over each PB format ;**
= biggest issue of “Speaker agnostic” systems

Technical Solutions

- Natural compatibility with PCM
- **Professional -> DCI Compliant :**
 - *DCP = PCM only (no lossy data codecs)*
 - *Watermarking ! (in media-server)*
- **Consumer-> With HDMI :**
 - *HDMI = max 8 PCM channels*
- Over Speakers & Headphones
- Existing Workflows & Equipment

“Financial”

Listening Formats

- Upgrade on existing 5.1 install
- **Most efficient solution :**
 - *Max “Sound in 3D” result*
 - *With “Minimum” amount of channels*
 - *Each extra channel cost money*
 - *Pro users ; each edit suite, controlroom*
 - *During production & post production*
- Speaker Agnostic has ‘its price’

Technical Solutions

- PCM already in all Audio devices
- Bandwidth reduction <-> lossless
- **“Single Inventory Distribution”**
 - *How many formats in it ? Bandwidth ?*
 - *Cross media Compatibility ? Markets ?*
- Easy integration (HW & SW)
- On existing DAW stations
- Maintain existing workflows

“Quality”

Listening Formats

- **Channel based system**
 - *Less issues than “Object based” systems*
 - *Sounds more “Natural” -> less phase issues*
- **Same experience at each seat**
 - *Enlarge “Sweet spot”*
 - *“Same Audio/Video experience”*
- **Loudness (dynamic range)**
 - *Keep the “movie-experience” alive*
 - *How to solve ? Home versus Mobile systems ?*

Technical Solutions

- **PCM Based**
 - *Magic of uncompressed audio quality*
 - *Bandwidth needed versus formats ?*
- **Upmixing (upconverting)**
 - *No change to original sound & reverbs*
 - *Should not have any phase issues*
- **Speed => “Lipsync operation”**
 - *New interactive markets -> realtime !*

“Easy”

Listening Formats

- **Easy to install for users**
 - Professionals -> edit suites, mixing rooms
 - Consumers -> What is realistic at home ?
- **Easy to find content**
 - Net based content delivery ?
 - Request for DCI compliant content at Home
- **Loudness parameters**
 - Offset necessary by just 1 digit number
 - Remote + Personalized solutions

Technical Solutions

- **“Push on 1 button” - solutions**
 - Very simple for customers
- **“ONE CARRIER”**
 - Playable on all audio devices
 - Containing the artistic mixes of each format (Stereo, 5.1, 3D Audio)
- **Easy Tools for Professionals**
 - Easy to create compatible solutions
 - Easy to control each artistic mixed output

CONCLUSION

“COMPATIBILITY” is determining the most important aspects ;

- ◆ **FINANCIAL & ECONOMICAL**

- ✧ In ALL kind of content ... Games, Movie, Broadcast, Music, Events etc.
- ✧ Engineers & Production houses ..
 - ✧ Workflow, Efficiency, Reliability, Quality Easy to install everywhere
- ✧ Cinema theaters & Consumers
 - ✧ Backwards compatibility, Easy to use, playable on all devices
- ✧ Reduces Distribution costs in Pro World as well for Consumers
 - ✧ Flexibility is key .. 1 download in which more formats

- ◆ **NEW 3D AUDIO EXPERIENCE** -> same spheric experience everywhere

- ◆ **DOES REQUIRE A DEEP INVESTIGATION** -> detail level = important

CAN CINEMA INDUSTRY AFFORD THE RISK TO HAVE BAD HOME COMPATIBILITY ??

How to achieve a “next gen audio standard”?

only if **EVERYBODY** = HAPPY ... and in ALL markets !!!

- 
- ◆ **Content makers** -> no extra investment, better IP protection
 - ◆ **Professional engineers** -> reliable, practice and flexible technology
 - ◆ **Postproduction facilities** -> small investments, “compatible” formats
 - ◆ **Broadcast facilities** -> Robust signal, no extra bandwidth, lipsync
 - ◆ **Hardware manufacturers** -> easy to implement, low cost, all markets
 - ◆ **Consumers** -> easy to set up, easy use, good content

↳ How to maximize immersive experience with minimum investments ?

Wilfried Van Baelen (Belgium)

- ◆ Professional Musician / Composer / Programmer / Arranger
 - ◆ Classic -> Concert Organist (first prize Royal Conservatorium), Trumpet, Trombone
 - ◆ Pop -> Synthesizers & Pop Organ, Music Director
- ◆ Engineer & Producer
 - ◆ Music -> More than 20 Platinum Albums
 - ◆ Film Mixing -> More than 20 Feature Films (incl. Golden Lion of the Future Award, Venice 2006)
- ◆ Founder & CEO “Galaxy Studios”
 - ◆ 1982 -> Started with Music productions only & Since 1999 Scoring & Sound for Picture
 - ◆ 2006 -> Addition of Postproduction Facility for Picture (4K DI Workflow incl. Printmasters)
- ◆ Founder & CEO “Mollywood”
 - ◆ Feature Film production company : financing & co-productions
- ◆ Founder & CEO “Auro Technologies”
 - ◆ Auro-codec, Auro-Matic etc..
- ◆ Inventor of the “Auro-3D Format & Concept” (2005)