

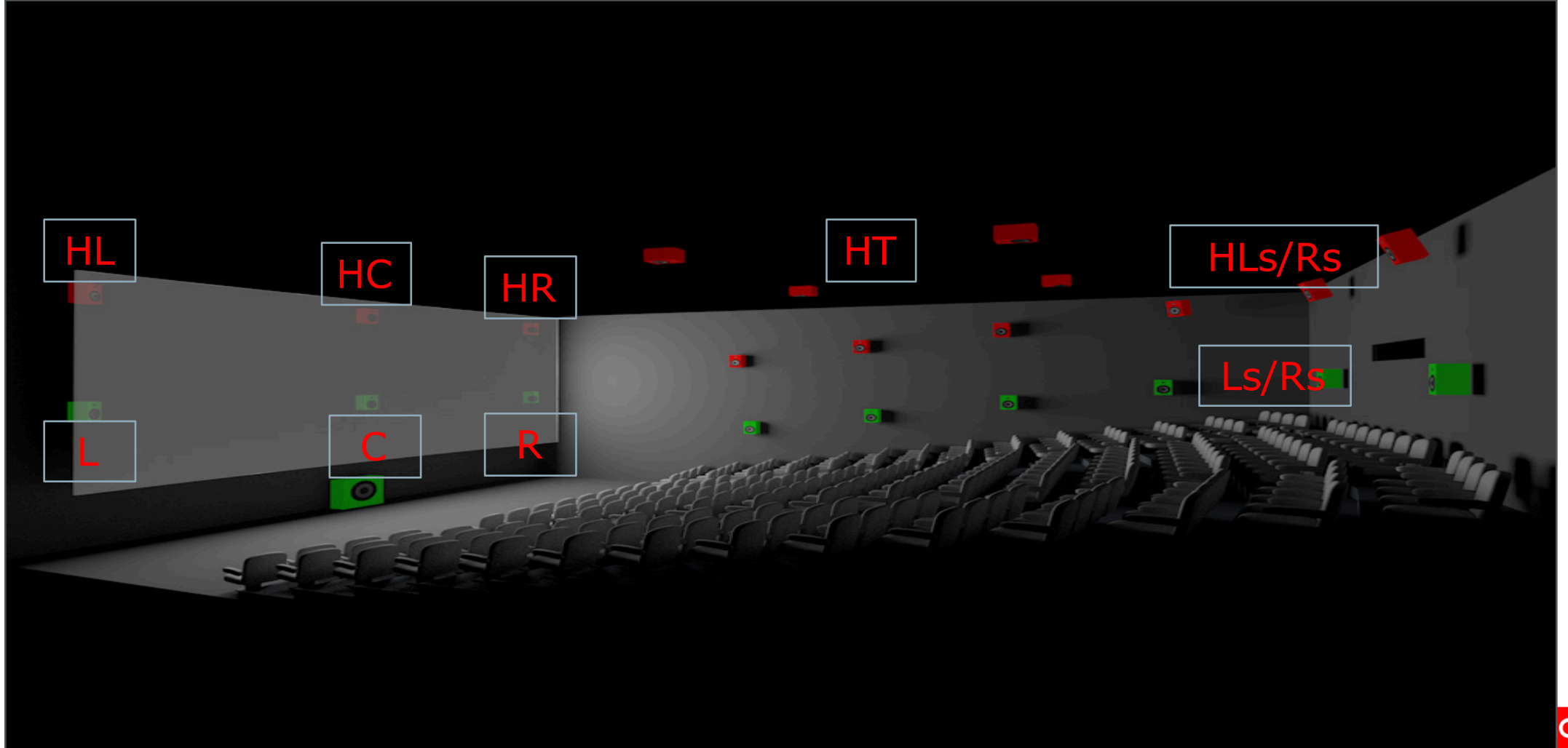


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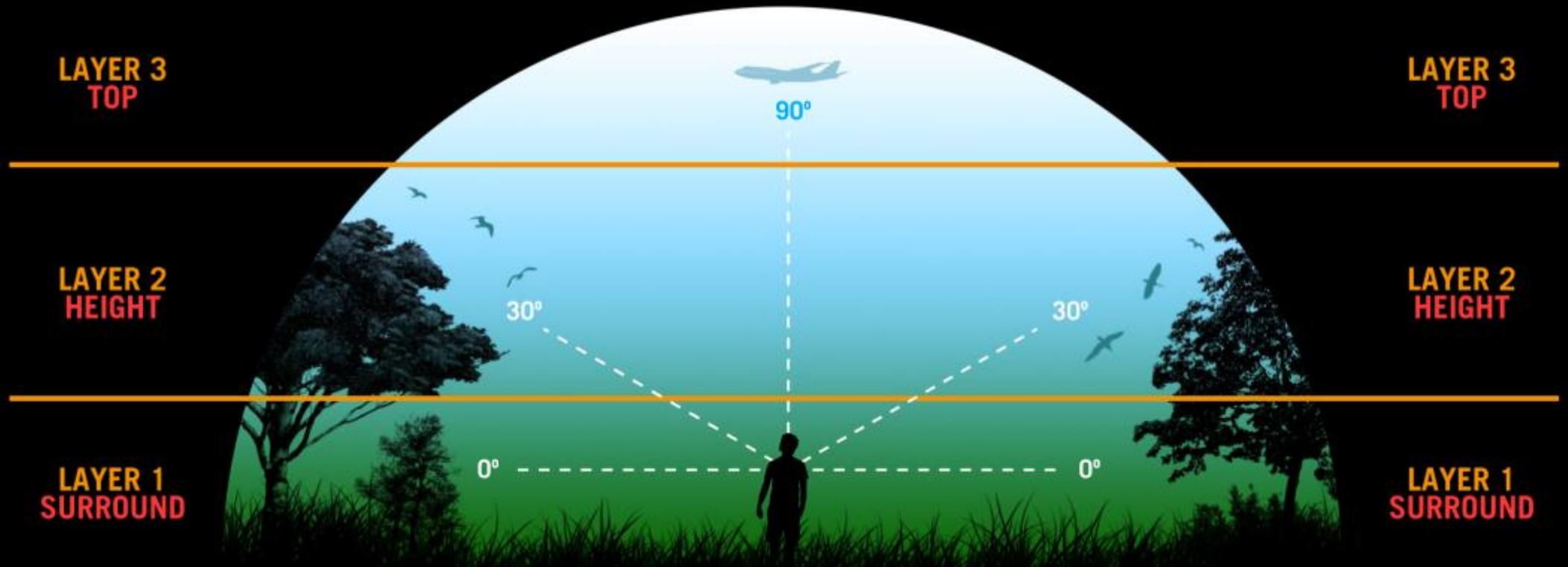
audio 11.1

experience sound in 3D

# The Auro-11.1 Listening Format



# Natural sound can be divided into 3 layers



Auro-3D : 3-Layer System

# Auro-11.1 Cinema Installation



# Auro-11.1 Cinema Installation



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# Auro-11.1 - A Unique Combination of 4 Key Ingredients



# #1 – Highest Quality



## ➤ Listening Formats

- All Auro-11.1 Listening Formats are '**channel-based**' systems → more natural versus 'object-based' systems
- Channel-based systems are the **only systems used in the market** (stereo, surround 5.1 and 7.1)
- Custom created for the Cinema Exhibition Industry...keeping the premium experience in the theater!
- **Sweet Spot enlarged**
  - *Mono Ceiling Overhead provides for a larger sweet spot for a more coherent 3D audio experience*

## ➤ Technical solutions

- **Natural compatibility with DCI spec** → Auro uses uncompressed audio
- **Non Masking, No Psycho acoustical compression** → No Quality loss
- **Up-mixing (up-converting) algorithms for alternative content**
- **Integrated decoder into existing media blocks**

# #2 – Best Compatibility



## ➤ Listening Formats

- Full Backwards compatibility with 5.1 Standard and Stereo!

## ➤ Technical solutions

- Natural compatibility with Linear PCM (uncompressed audio)
- DCI Compliant: Watermarking included for copy protection of the content
- Compatible With existing Production Equipment and workflows

# #3 – Best Value for Money



## ➤ Installation/ Operation

- Upgrade on existing 5.1 Surround systems
- **Maximum** “Sound in 3D” result with a **Minimum** number of speakers & amplifiers
- **Non Recussing Licensing Model**
- **No license fee for content creation**

## ➤ Technical solutions

- **Uses Uncompressed audio (PCM) as the data carrier for Auro 11.1**
  - supported in all Audio Cinema Devices and the DCI spec (standard)
- **Single Media Distribution (Single Inventory Distribution)**
- **Efficient integration in existing DAW (audio post production workstations) and Software**
- **Maintains existing workflows** (only change is some templates)
- **NO rendering station needed** (in post production or at theaters)
- **NO new media server needed** (software upgrade of existing servers)

# #4 – Most Easy-to-Use



➤ **Content CREATION is EASY thanks to :**

- *Natural compatibility of the Auro-11.1 speaker layouts with Surround Standards*
- *Easy-to-use creative tools*
- *Ability to remain in the uncompressed audio domain*

➤ **Content PLAYBACK is EASY thanks to :**

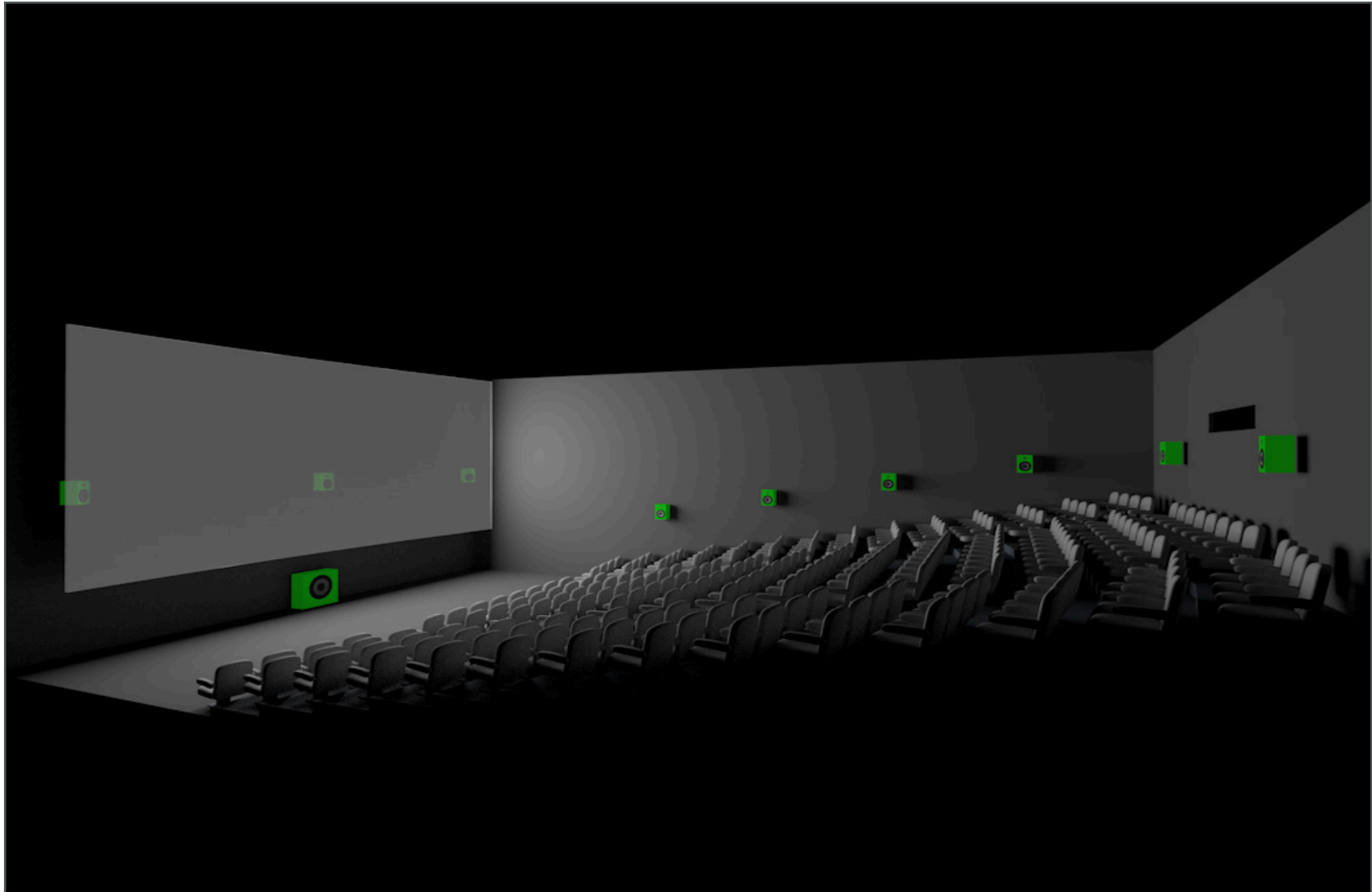
- *One Single Inventory distribution*
- *No mistakes can be made by operators (often occurs with multiple CPLs and KDMs on one DCP)*
- *Real Time 11.1 Up-mix capability for Alternative content!*

➤ **EASY to INSTALL on ALL existing surround systems**

- *There is always room above the current surround speakers of a 5.1 installed system*
- *Auro-11.1 speaker layouts can be compatible with Dolby Atmos, but Auro soundtracks provide a more immersive experience!*

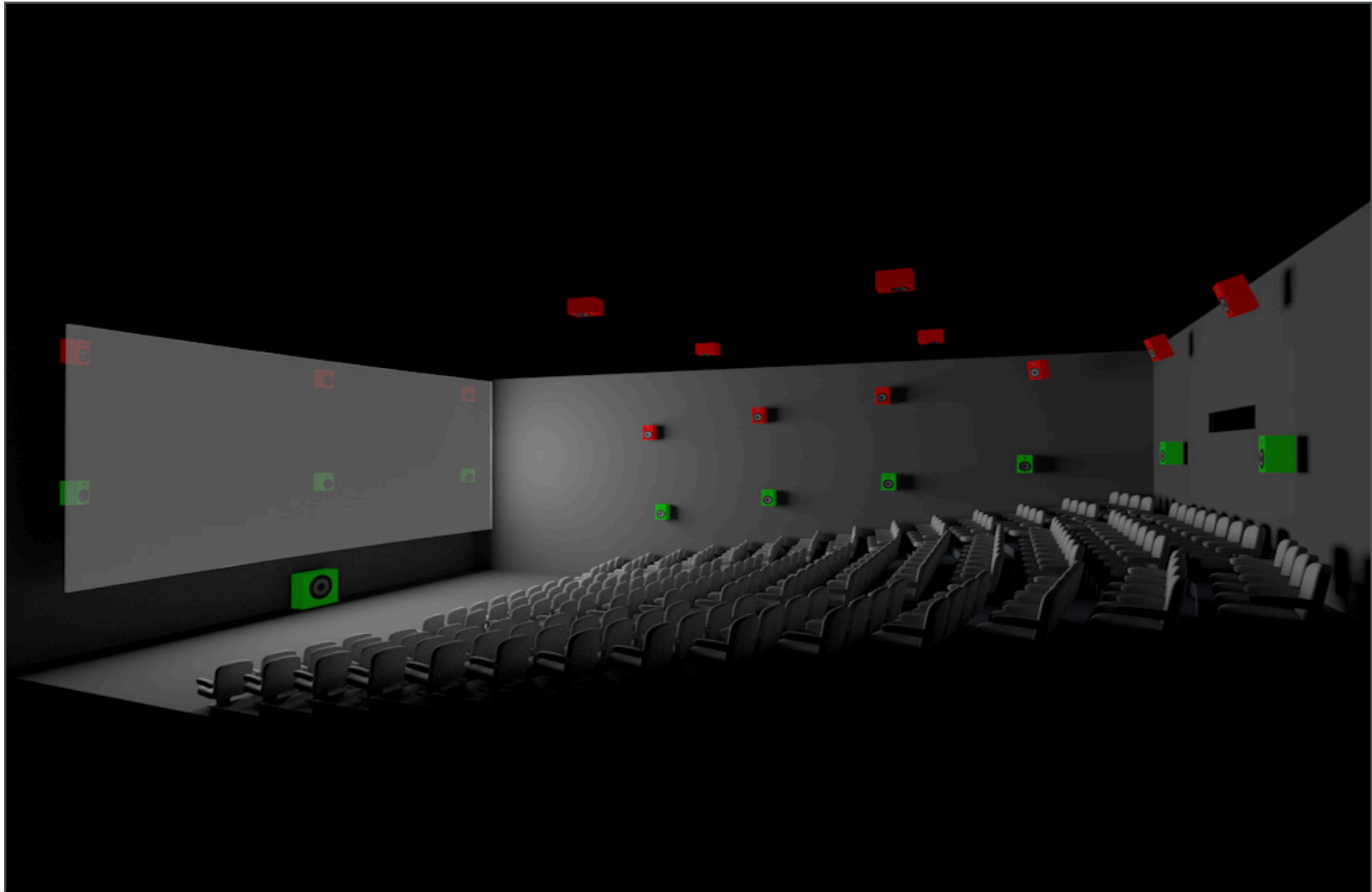
# Sound in 3D – “Up Stream” Compatibility

- 5.1 / 7.1



# Sound in 3D – “Up Stream” Compatibility

- 5.1 / 7.1



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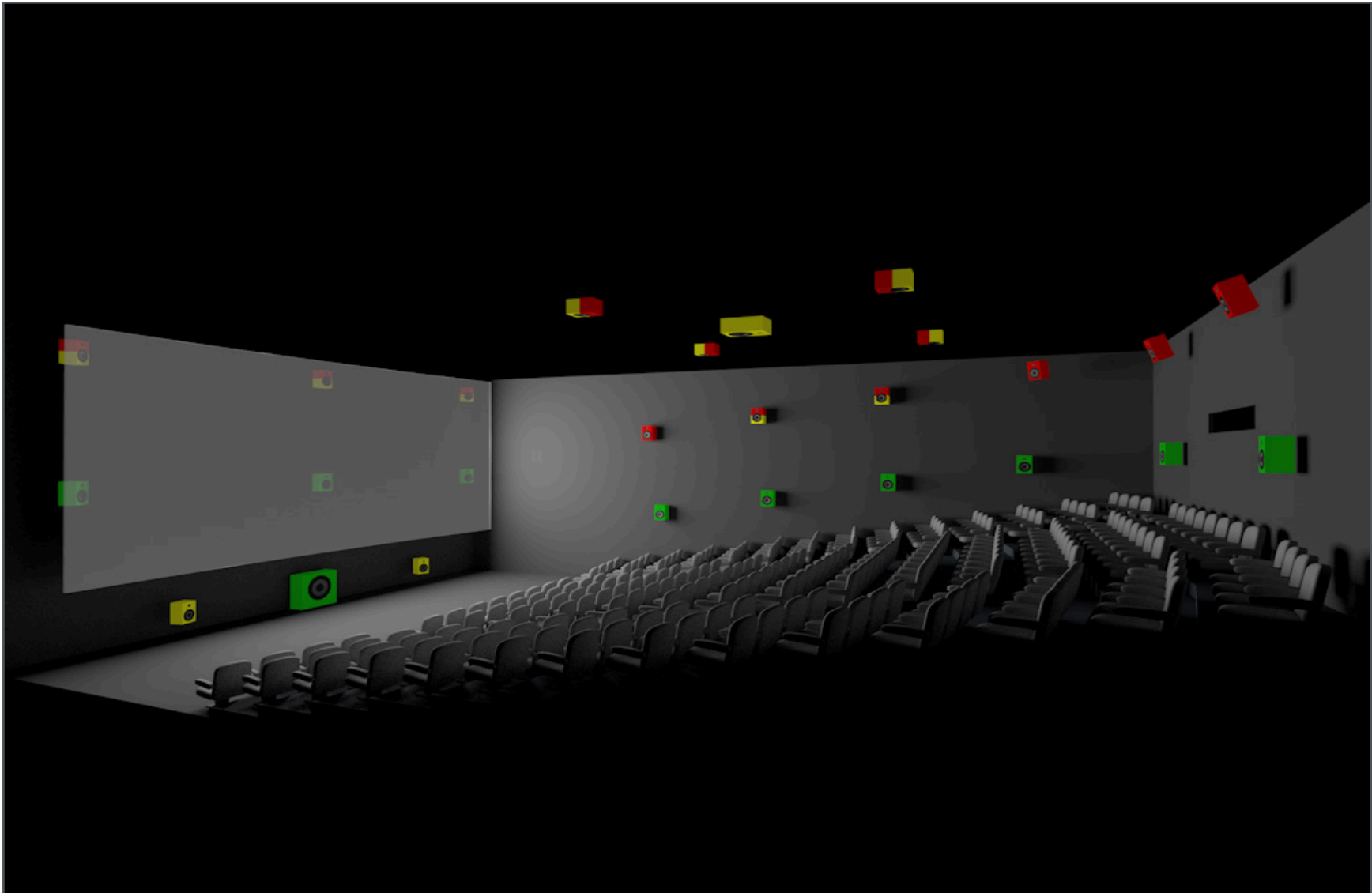
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# Sound in 3D – “Up Stream” Compatibility

- 5.1 / 7.1



IMMsound 23.1



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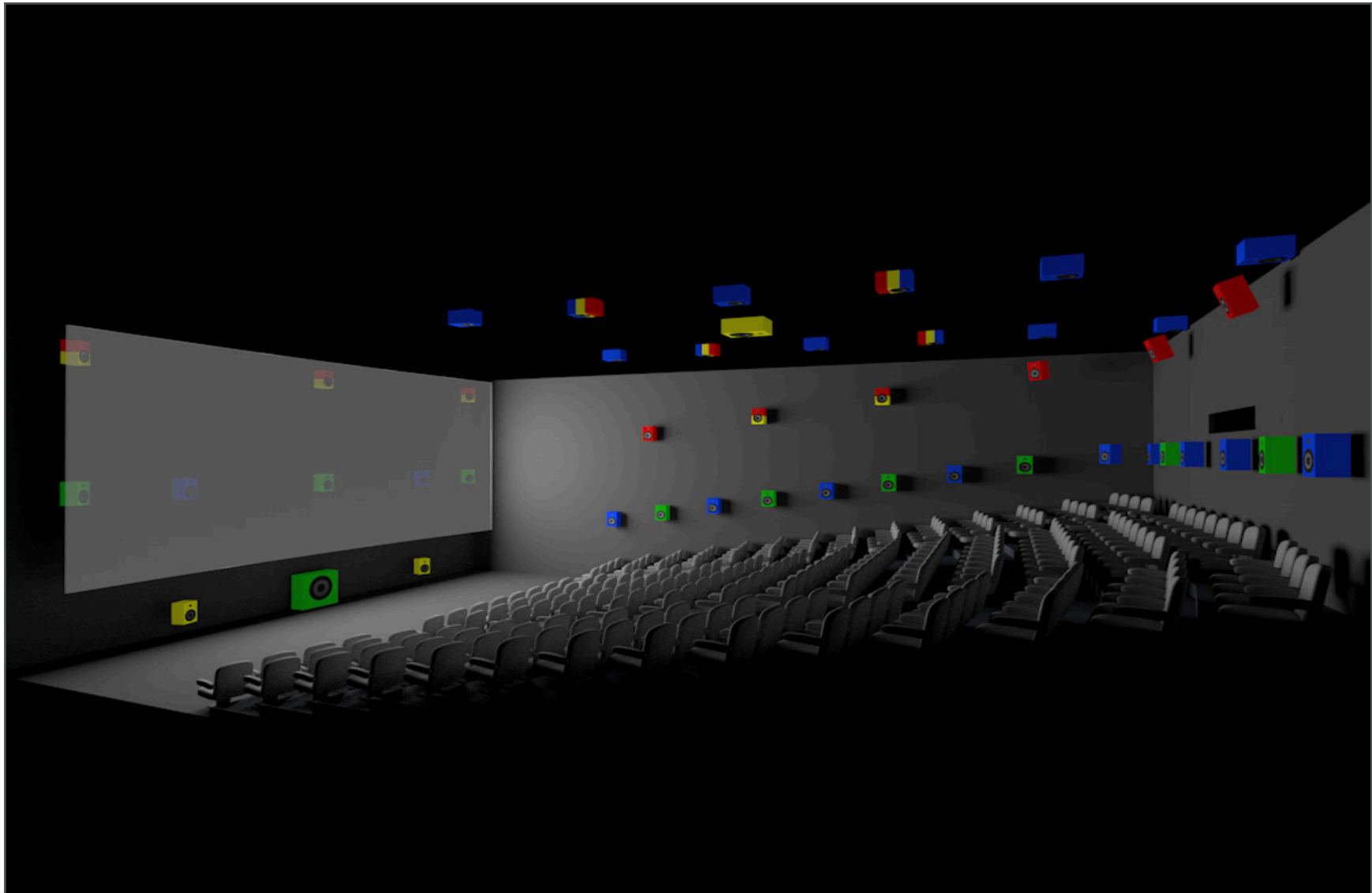
# Sound in 3D – “Up Stream” Compatibility

- 5.1 / 7.1



IMMsound 23.1

Atmos 47-64.1



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# Sound in 3D – “Object Based” versus “Channel Based” Sound

- Object Based (Dolby Atmos)
  - Unique sounds or objects are “steered” around the room based on vector metadata which accompanies the additional audio file in the distribution and renders the sound of a particular object in space.
  - Base layer 5.1 or 7.1 “beds” accompanies the object sound file and vector metadata. “Beds” contain dialog, music and other sounds that don’t “move” or require steering
  - Unique distribution, separate KDM/CPL
  - Requires more unique channels and speakers...24-64
  - Great for “Dry” Sounds....but “Wet” Sounds cant easily be rendered with meta data
    - Ok for airplane flying around your head. Not OK for Natural Ambience or sounds rich in reflections (e.g orchestra or crowd)
  - New workflows and content creation tools are required
  - “Object metadata” ultimately leveraged to improve personal multi media experience
- Channel Based (Auro 11.1)
  - 5.1, 7.1, 11.1 are all channel based formats
  - All objects, ambience, FX, etc are “mixed” in to a predetermined amount of channels by the mixer on a dub stage and played back in a theater with the corresponding channels
  - Can be easily mixed down to fewer channels or encoded
  - More compatible with existing production audio equipment and workflows
  - More capable of handling “Wet” sounds
    - natural ambiances and effects captured in the native channel count

## Sound in 3D – “Object Based” versus “Channel Based” Sound

Endorsing object based soundtrack creation risks ultimately loosing theatrical attendance to an “improved” personal multi-media experience ...either real or imagined.



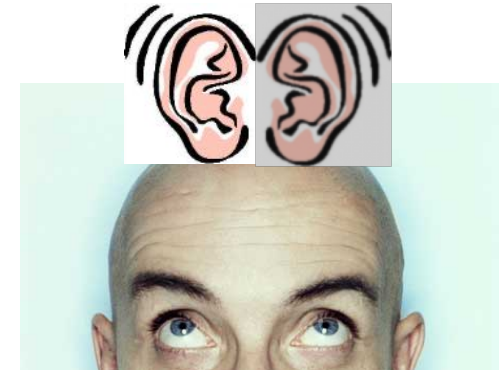
# Auro-11.1 - The Most Immersive Experience

One common feedback from listeners who compared the different 3D Audio systems in the market is that the Auro-11.1 speaker layouts in cinemas are giving the most immersive experience!

Reasons for that are:

- All Auro-11.1 Listening Formats have **HEIGHT channels AROUND** the listener (front, sides & back)
  - Not ONLY over head
- The **30° Vertical Height** channels are **much more important than the Overhead** ceiling channels
  - WHY????

➤ We don't have ears on the top of our heads!



➤ Overhead speakers are for SFX...not an ambience enhancement

*All Auro-11.1 speaker layouts guarantee the best compatibility with the existing systems which are all channel-based. Object-based spot point sounds risk making 3D sound more of a "gimmick" than a truly immersive experience.*

- Additionally, Auro-11.1 uses **less speakers and amplifiers** than competitive systems

*More speakers, more channels or object-based technology is more expensive.*

# Auro 11.1 = DCI COMPLIANT !

- *Film studios require maximum protection of their content by using "Watermarking"*
  - *a forensic system that is adding unique information to the audio signal for each theater every time allowing for analysis of where and when the content was copied*

Digital Cinema Initiative (DCI) specs are providing watermarking in the media server on all channels which allows to recognize the theater and time if somebody recorded the audio in the theater

The Auro-Decoder is embedded in the DSP Watermarking chip.

➔ *Will Object based systems put the watermark on all 23-64 channels to be compliant with the DCI spec?*

- **AURO 11.1 IS THE ONLY DCI COMPLIANT next generation audio architecture in the market today**

# Auro-11.1 = SINGLE MEDIA DISTRIBUTION

- **AUTHORING = JUST ONE DCP (Single Inventory Distribution)**
  - Similar to normal workflow
  - Just **ONE** KDM
  - **NO** licensing FEE
  
- **JUST ONE PCM CARRIER** : 5.1 Surround or 7.1 Surround
  - *5.1 SURROUND WILL PLAYBACK ON EACH VENUE*
  - *AUTOMATIC PLAYBACK of the AURO 11.1 ORIGINAL MIX if Auro-decoder is installed*
  
- **THE ONLY VIABLE SOLUTION TO COMBINE MULTIPLE FORMATS IN ONE DISTRIBUTION**

# Auro-11.1 = THE SUPERIOR SOLUTION

- HIGHEST QUALITY
- BEST COMPATIBILITY
- MOST ECONOMIC
- AVAILABLE NOW



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DREAMWORKS

# RISE OF THE GUARDIANS

COMING SOON IN  
BARCO AURO 11.1