



STUDIO  
SOUND  
SERVICE



# Acoustic Design for Broadcasting next Generation Audio

Dolby Atmos Design, Home Entertainment



# Who we are





Studio Sound Service is an acoustic design firm, located in Florence, Italy.  
Since 1983 we design rooms for music and audio/video production.  
Some works:

- FOX Dolby Atmos HE Studios @ Rome (IT);
- FOX post-production studios @ München (DE);
- FOX post-production studios @ London (UK);
- In House (Dolby® approved – Sorrentino) @ Roma;
- Aemme Recording Studio – Salvatore Addeo @ Lecco
- D:POT Recording Arts @ Prato – Fabrizio Simoncioni;
- Platinum Studio @ San Gimignano – Diego Calvetti;
- Mulinetti Studio @ Genova – Alberto Parodi  
*(Resolution Award 2015 Best Audio Facility, Nomination);*
- The Garage @ Civitella v.d.C. (AR)  
*(Resolution Award 2014 Best Audio Facility, Nomination);*
- House of Glass @ Viareggio (LU) – Gianni Bini  
*(Resolution Award 2013 Best Audio Facility, Nomination);*
- Waves Music @ Genova;
- PPG Studios (Andrea Bocelli) @ S. Pietro Belvedere (PI);
- SonicFab Studio @ Pioltello (MI);
- Renato Zero Studio @ Rome;
- Marco Masini Studio @ Florence;
- Damian Lazarus, Monastic Studio @ Vicchio (FI);
- Giorgia Angiuli Studio @ Florence;
- Vinai Studio @ Brescia;
- Barys Arena (ice hockey) @ Astana, Kazakhstan;
- George Lucas Home Theater, Italy;
- Chiesa Santa Maria Nuova (Arch. M. Botta) @ Terranuova B. (AR);
- Prada Auditorium and Conference Room via Orobica @ Milano;
- Presentation room Ferrari HQ @ Maranello (MO);
- Duomo di Siena new audio system;
- Siemens HQ @ Milano;
- EVAC Dubai Metro;
- EVAC Bahrain and Islamabad airport (THALES).



# Audio Facilities



# FOX - NatGeo UK

Hammersmith, London UK





# FOX - NatGeo DE

München, DE





# FOX - NatGeo IT

Roma





# inHouse Mirko Perri

Roma





# SonicFab

Pioltello (MI)





# Renato Zero

Roma





**Marco Masini**

Impruneta





# Platinum Studio Diego Calvetti

San Gimignano - SI





# House of Glass Gianni Bini

Viareggio





# Mulinetti Alberto Parodi

Genova





# D:POT recording arts Fabrizio Simoncioni – Litfiba

Prato





# Aemme Recording Studio Salvatore Addeo

Lecco





# Officina Sonora del Bigallo

Bagno a Ripoli - FI





# Marzi Recording Studio

Rimini





# Sudestudio

Guagnano – LE





# Barys Arena

Astana – Kazakhstan





# Hotel Mediterraneo

Napoli





# Auditorium Castelnovo de' Sabbioni

Cavriglia (AR)





# Siemens Hq

Milano





# Ferrari Presentation Room

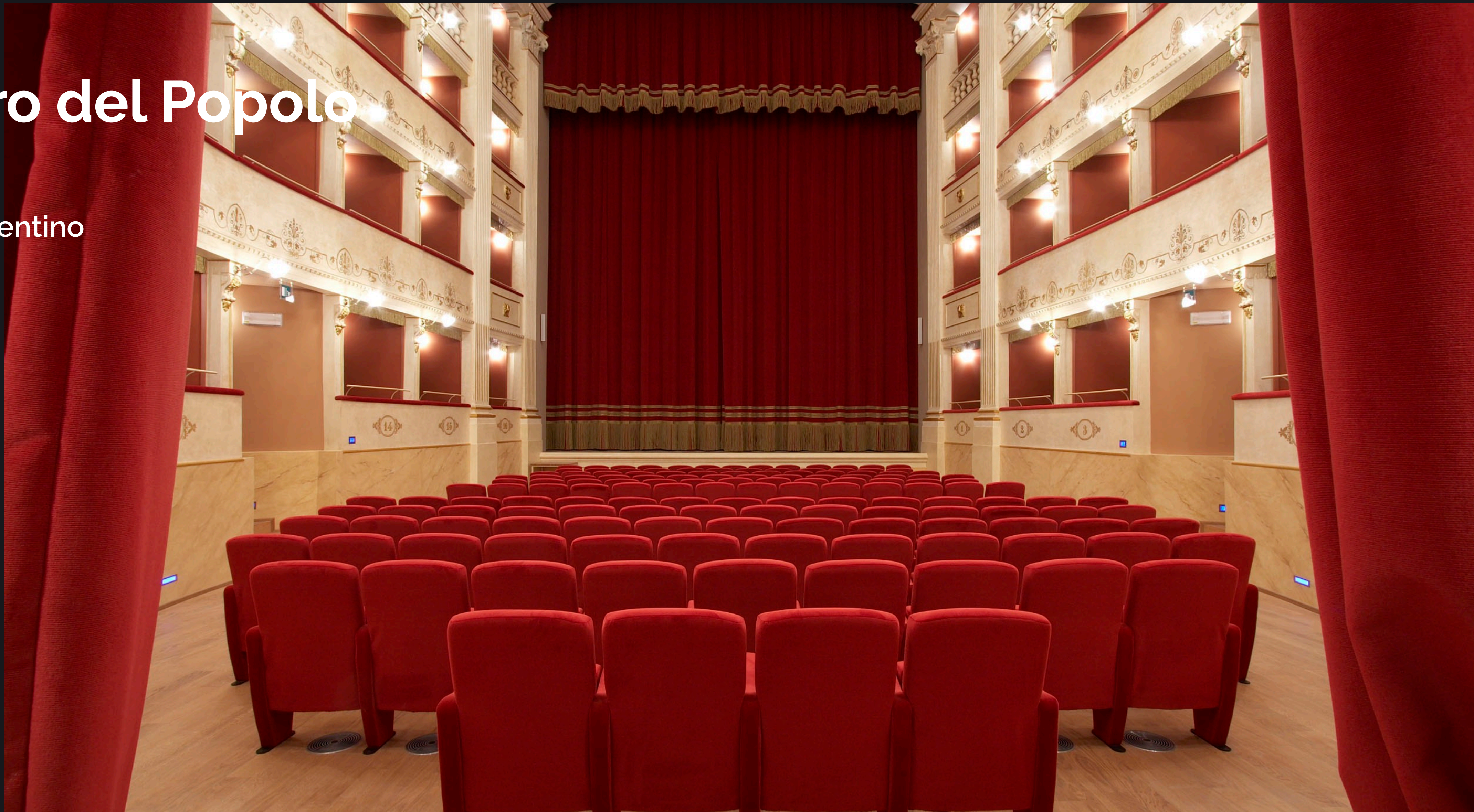
Maranello





# Teatro del Popolo

Castelfiorentino





# Duomo di Siena

Siena





# Dolby Atmos

 DOLBY.ATMOS  
HEAR THE WHOLE PICTURE



## Objects + Beds

While the use of audio objects provides desired control for discrete effects, other aspects of a movie soundtrack do work effectively in a channel-based environment.

- A. beds are channel-based submixes or stems (5.1, 7.1 or 9.1)
- B. e.g. ambient effects or reverberations actually benefit from being fed to arrays of speakers → channels.



Figure 2.2 Object and Bed Combination



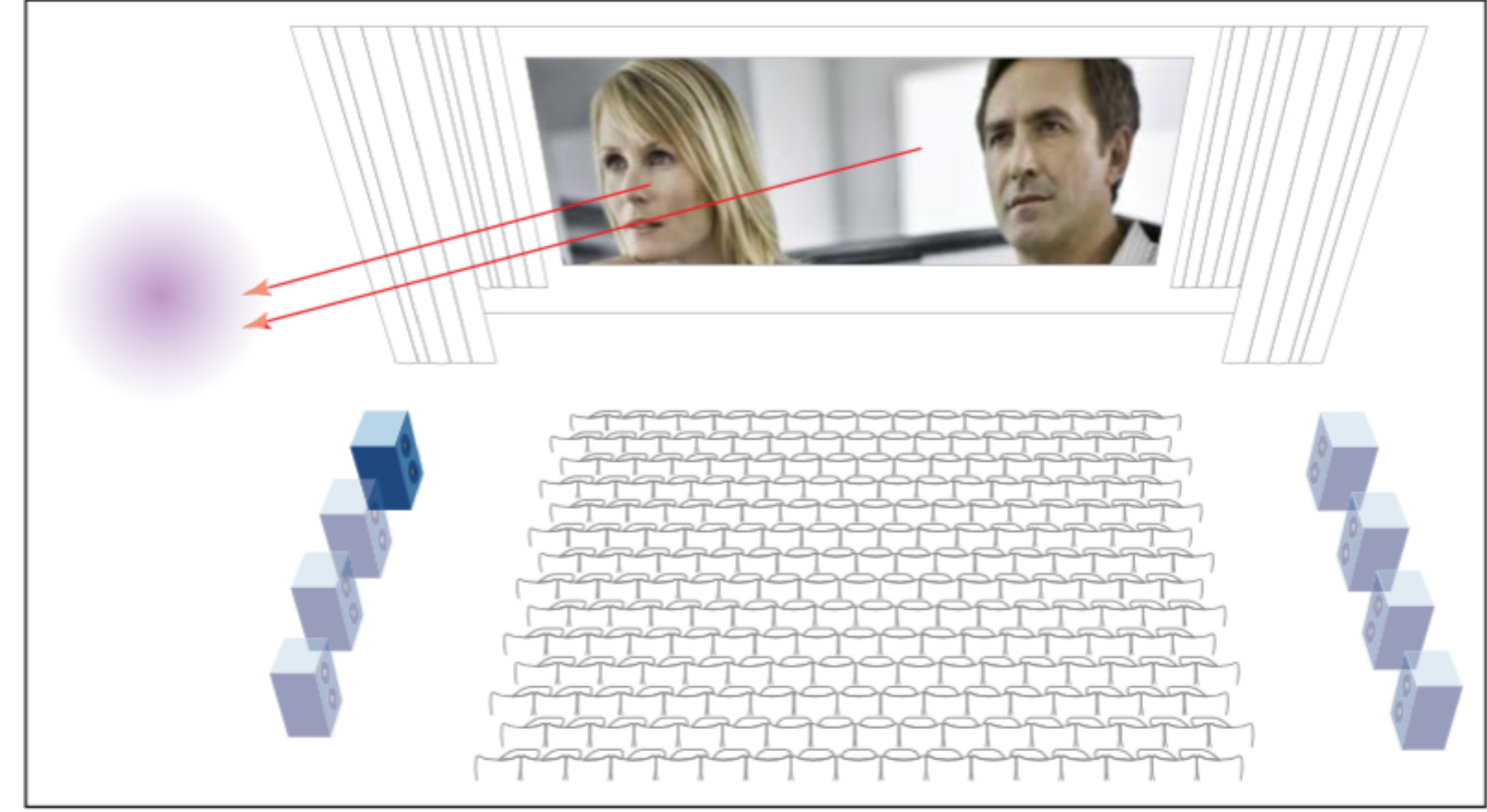
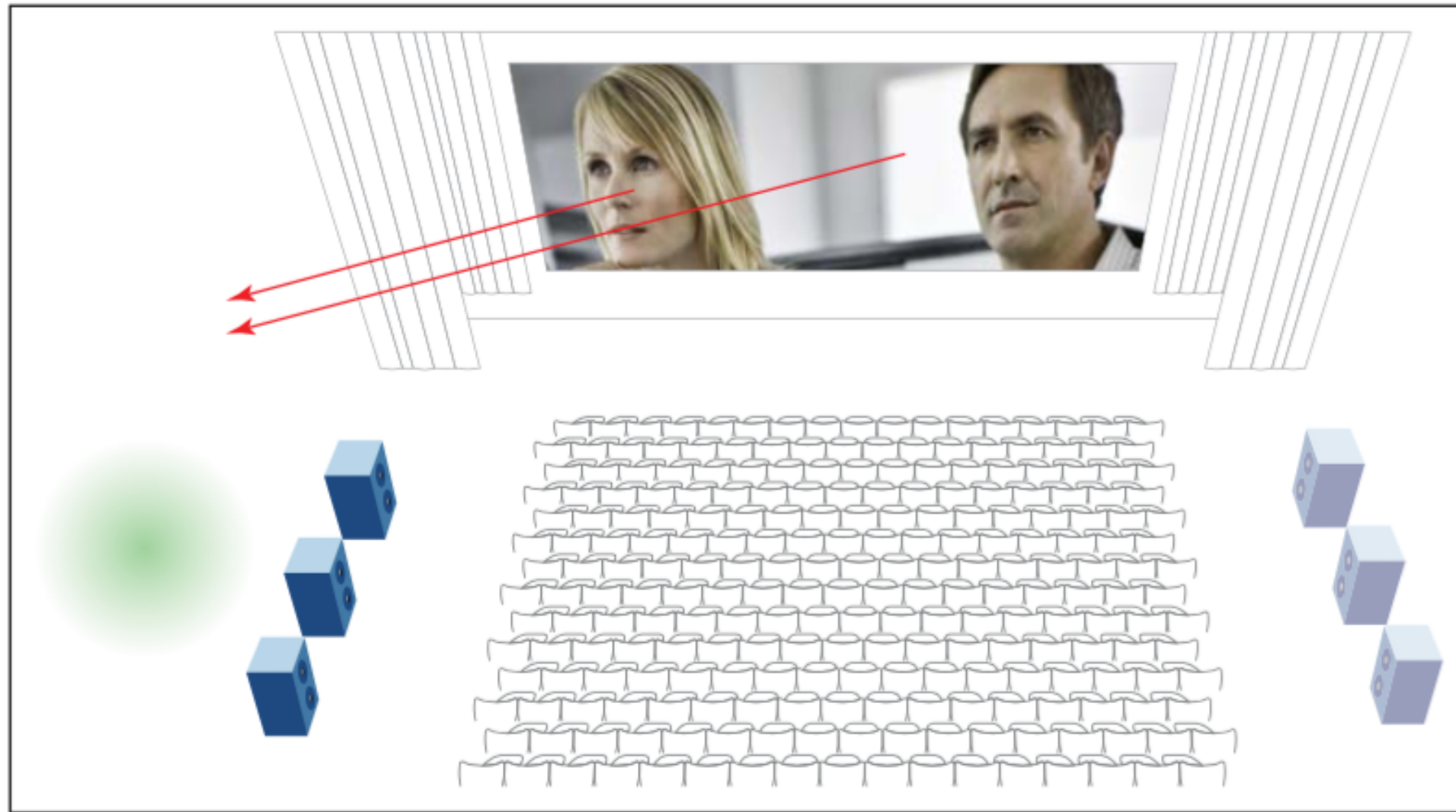


Figure 2.1 Benefits of Increased Surround Resolution for Audio/Visual Coherence

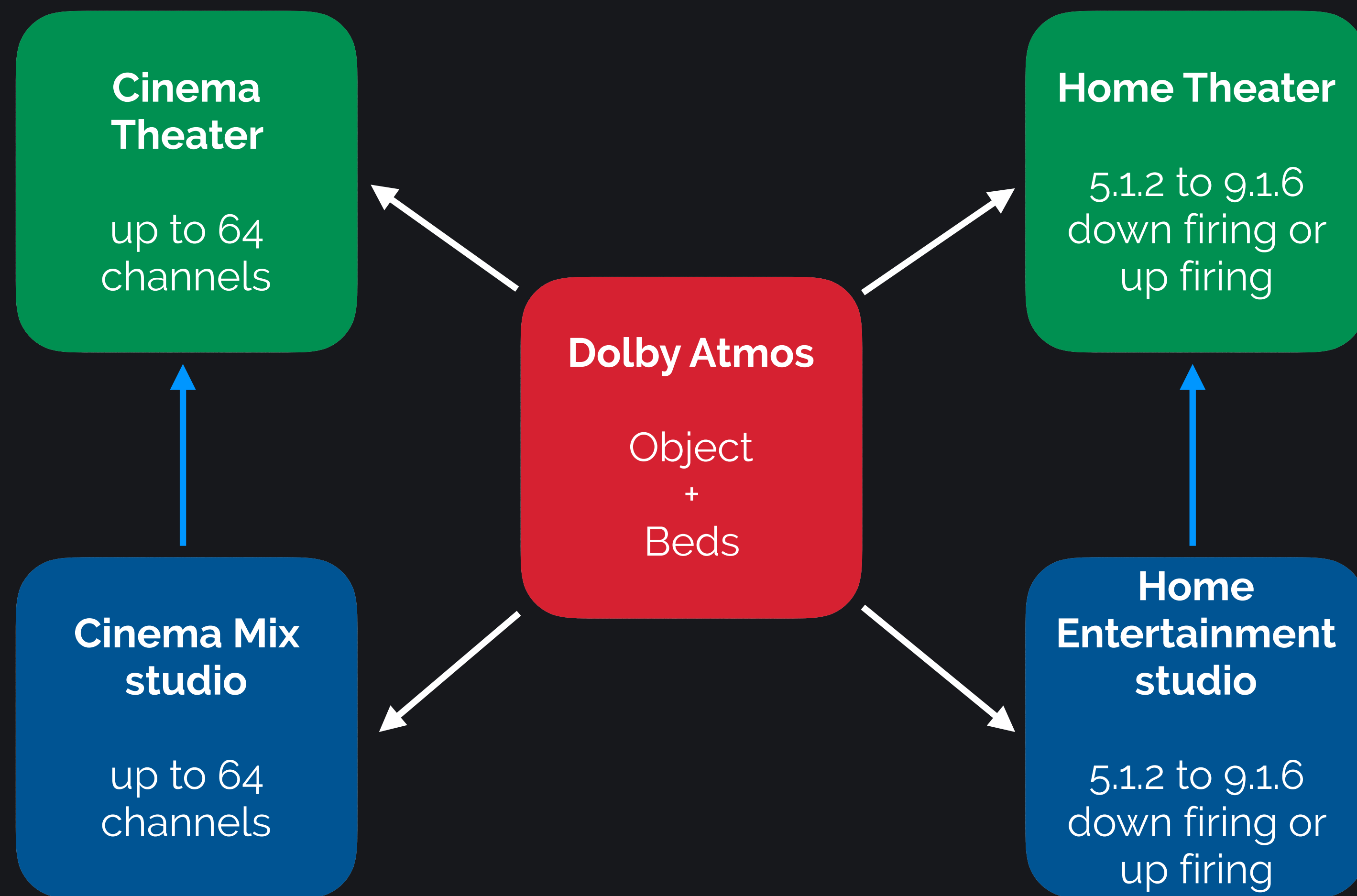
Audio Objects:  
groups of sound elements that share the  
same physical location in the auditorium



location (x, y, z), not speaker!

- A. They can be static or move.
- B. Controlled by metadata that details the position of the sound at a given point in time.
- C. When objects are monitored or played back in a theatre, they are rendered according to the positional metadata using the speakers that are present, rather than necessarily being output to a physical channel.





- A. Different speaker locations can differ in effectiveness depending on the theatre design.
- B. Dolby Atmos is adaptable and able to playback accurately in a variety of auditoria *(highly flexible configurations)*.
- C. The speakers layout remains compatible with previous cinema systems.
- D. In contrast to using all 64 output channels available, the Dolby Atmos format can be accurately rendered in the cinema to other speaker configurations such as 7.1, allowing the format to be used in existing theatres with no change to amplifiers or speakers.



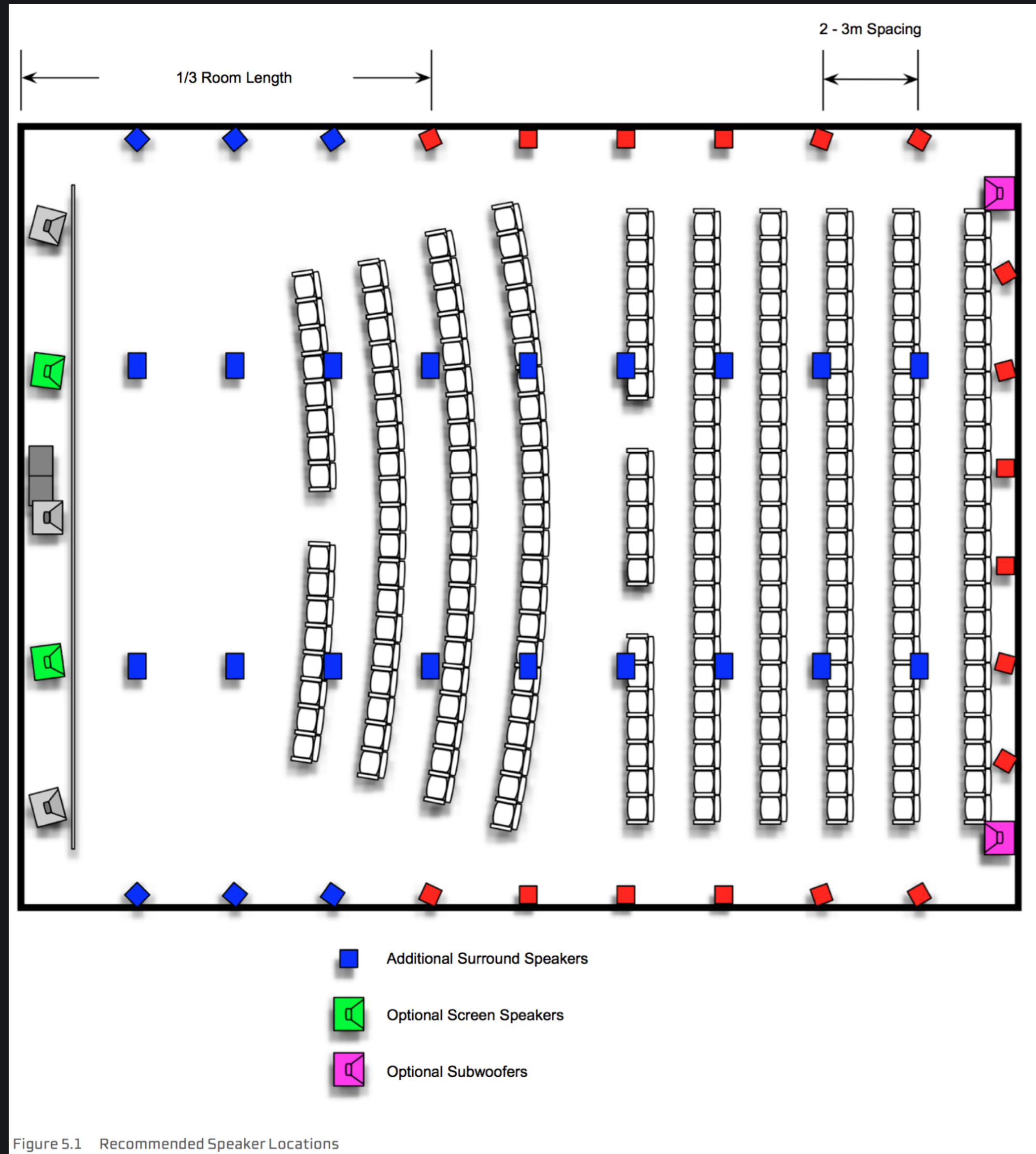


Figure 5.1 Recommended Speaker Locations

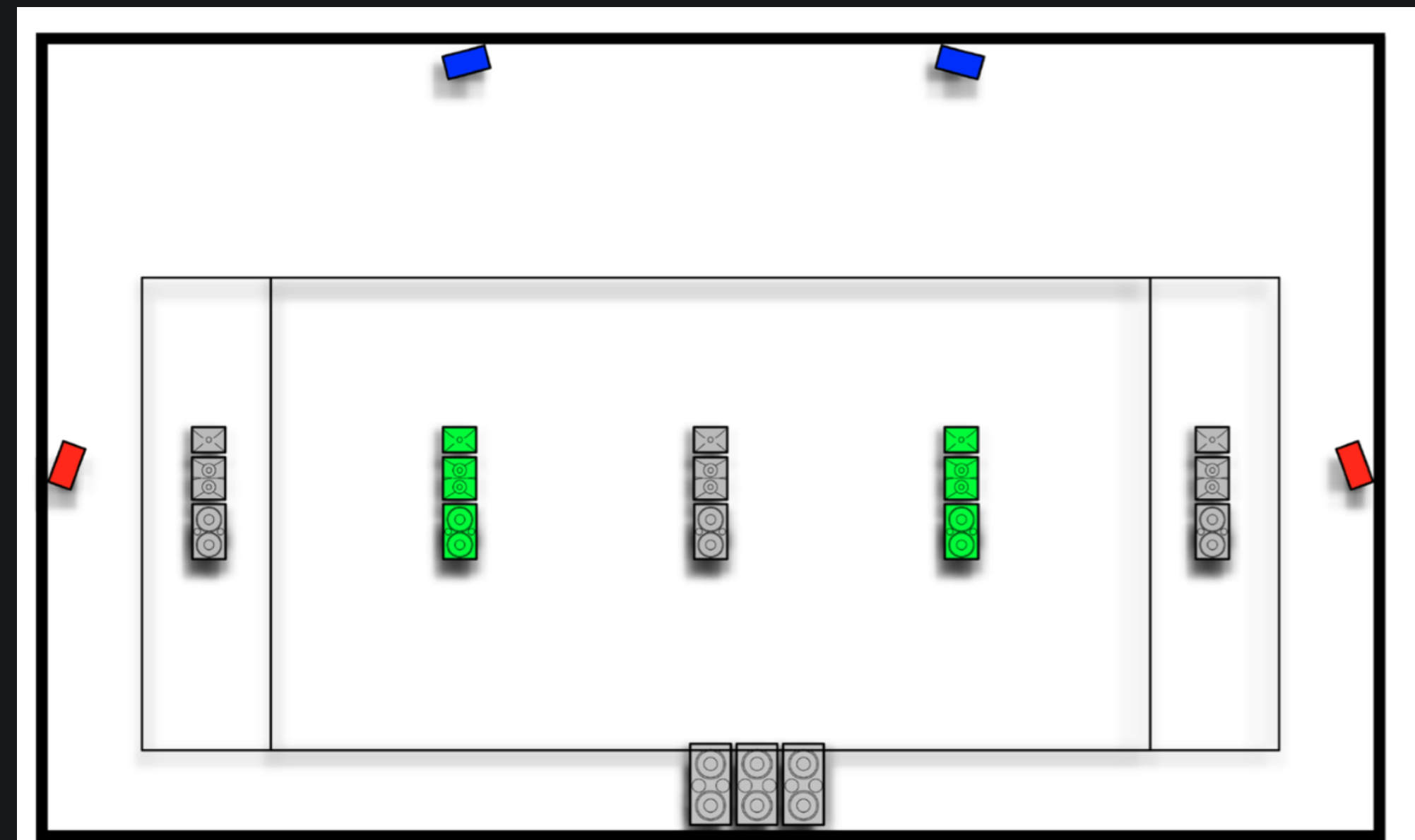


Figure 5.2 Recommended Speaker Locations (Screen, Side Surrounds, and Top Surrounds)

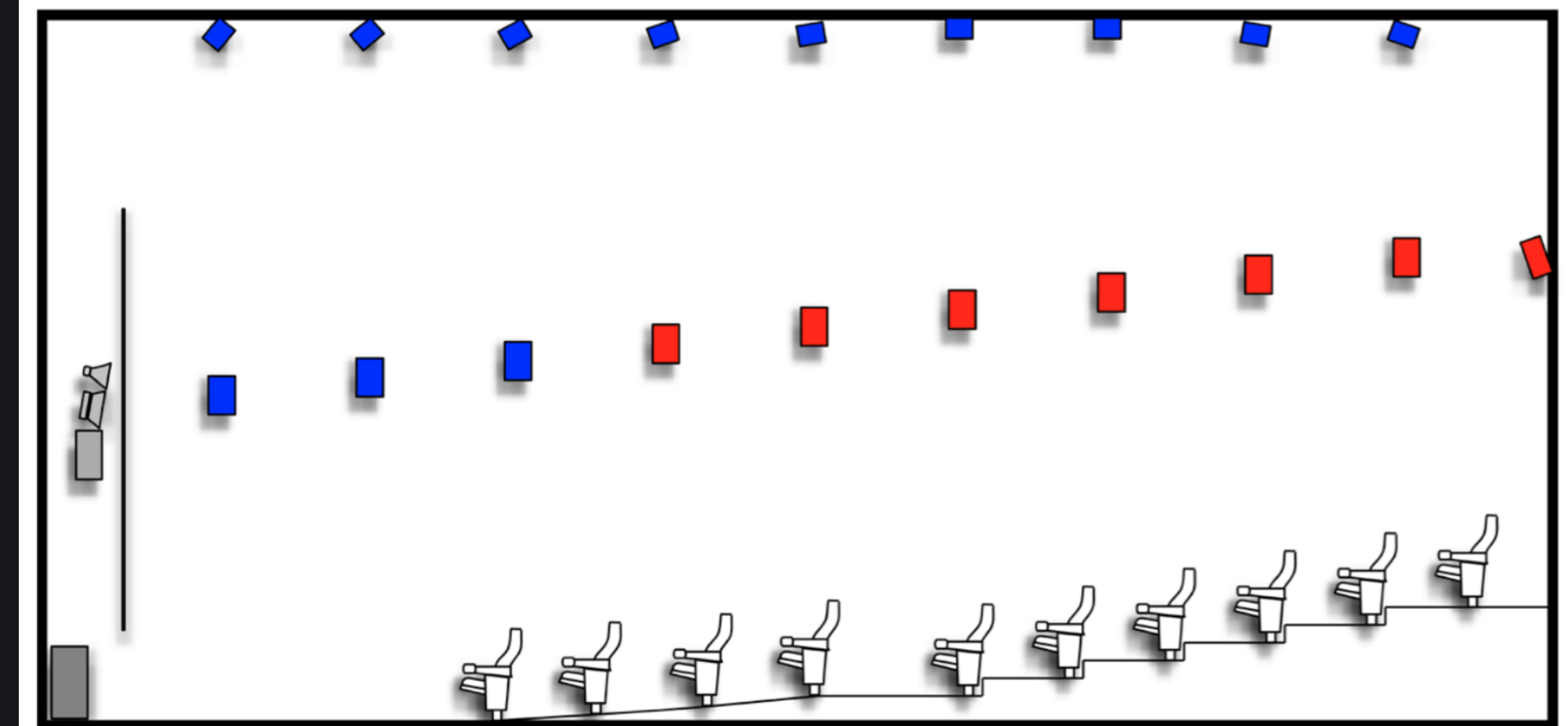
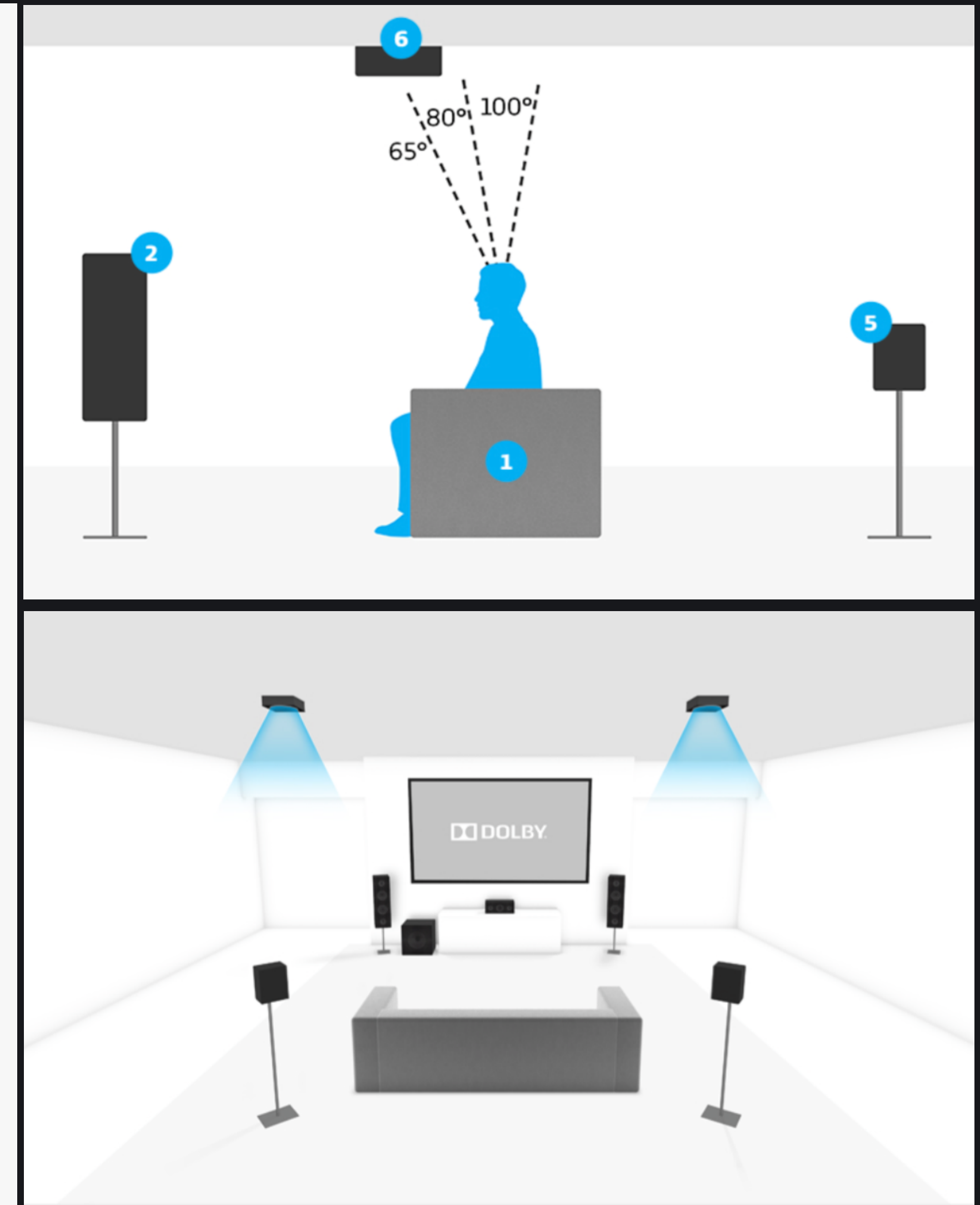
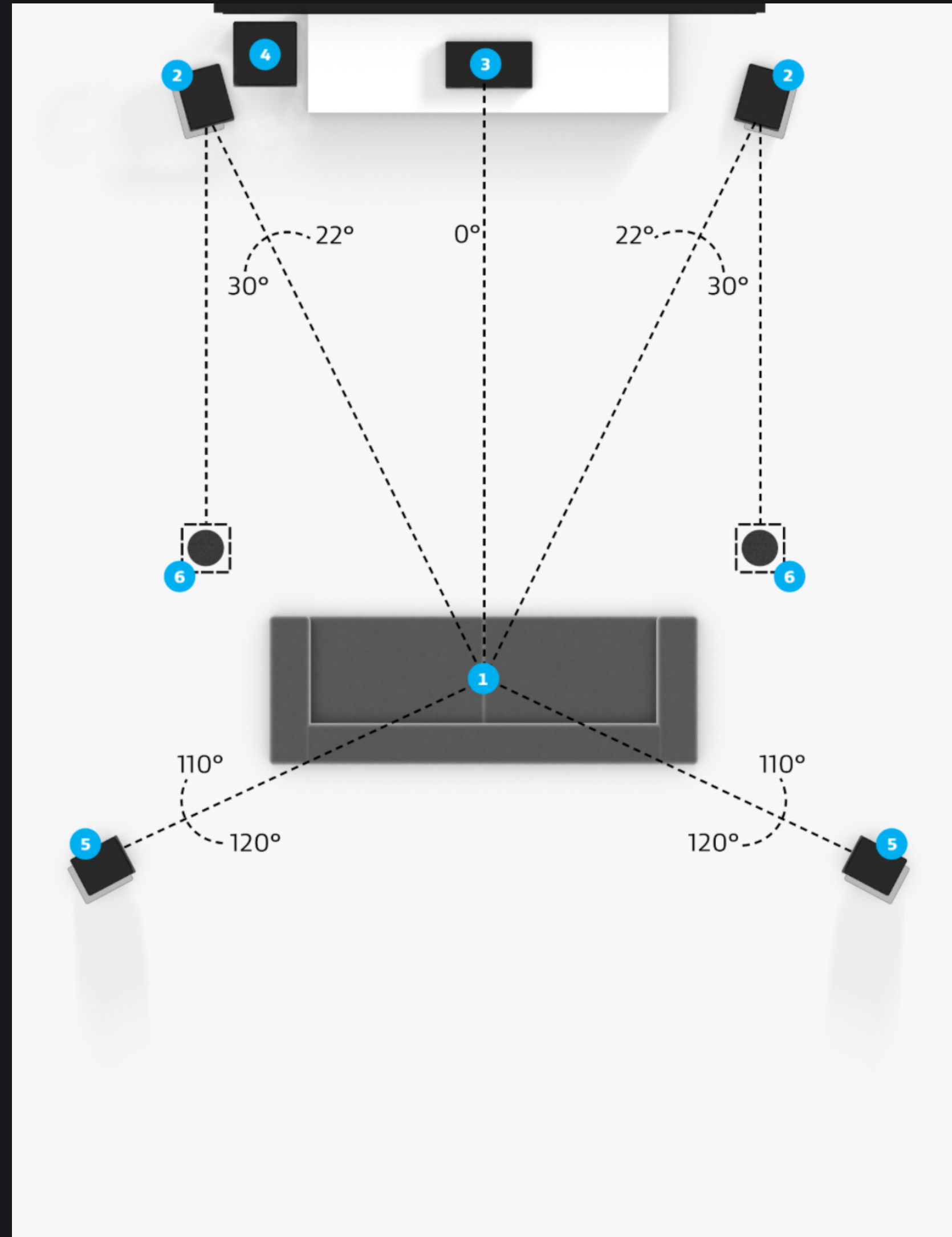


Figure 5.3 Recommended Side Wall and Ceiling Speaker Locations

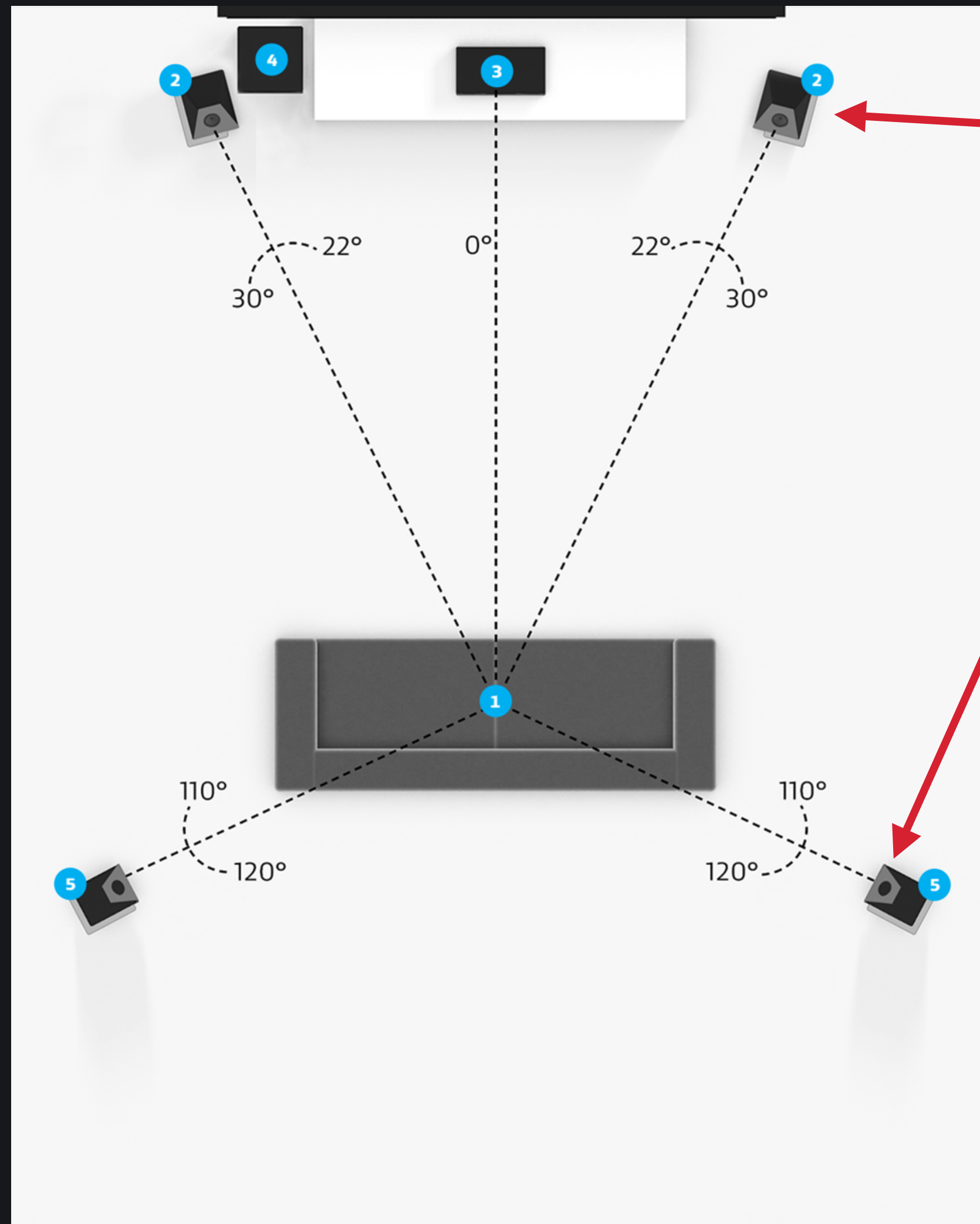


# Home Theater 5.1.2 down-firing





# Home Theater 5.1.4 up-firing



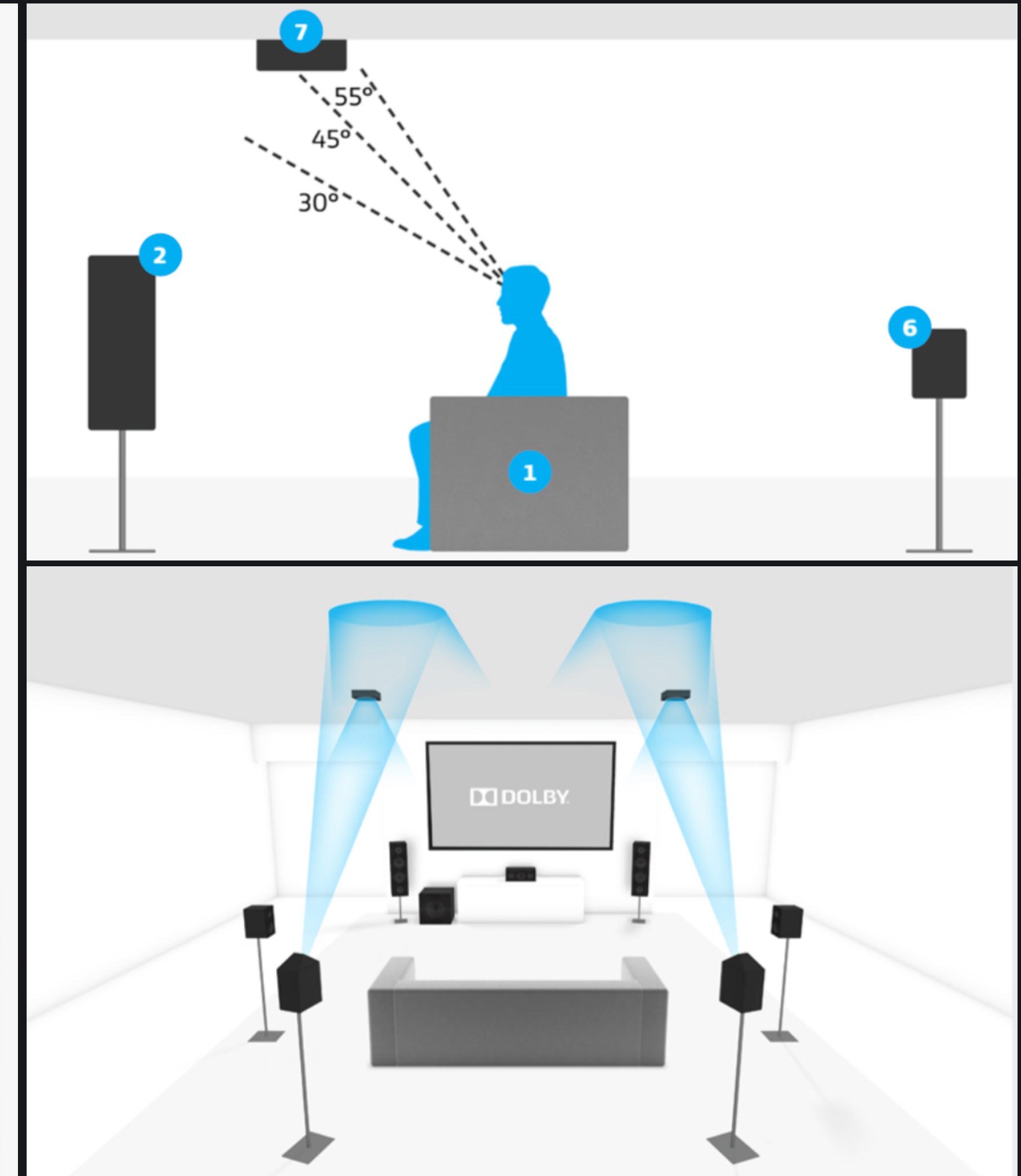
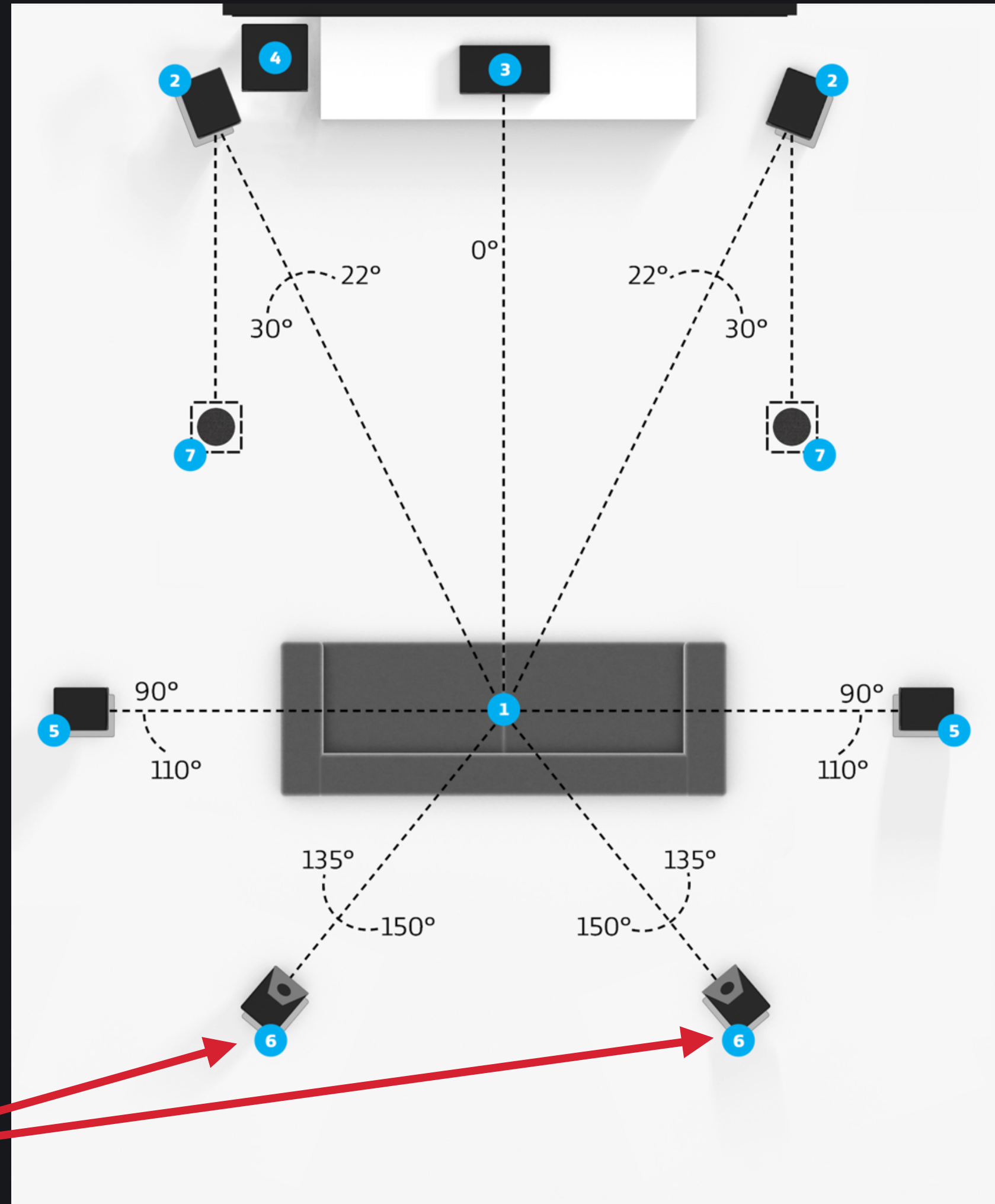
Atmos enabled surround  
speakers (up-firing)





# Home Theater 7.1.4 Hybrid overhead

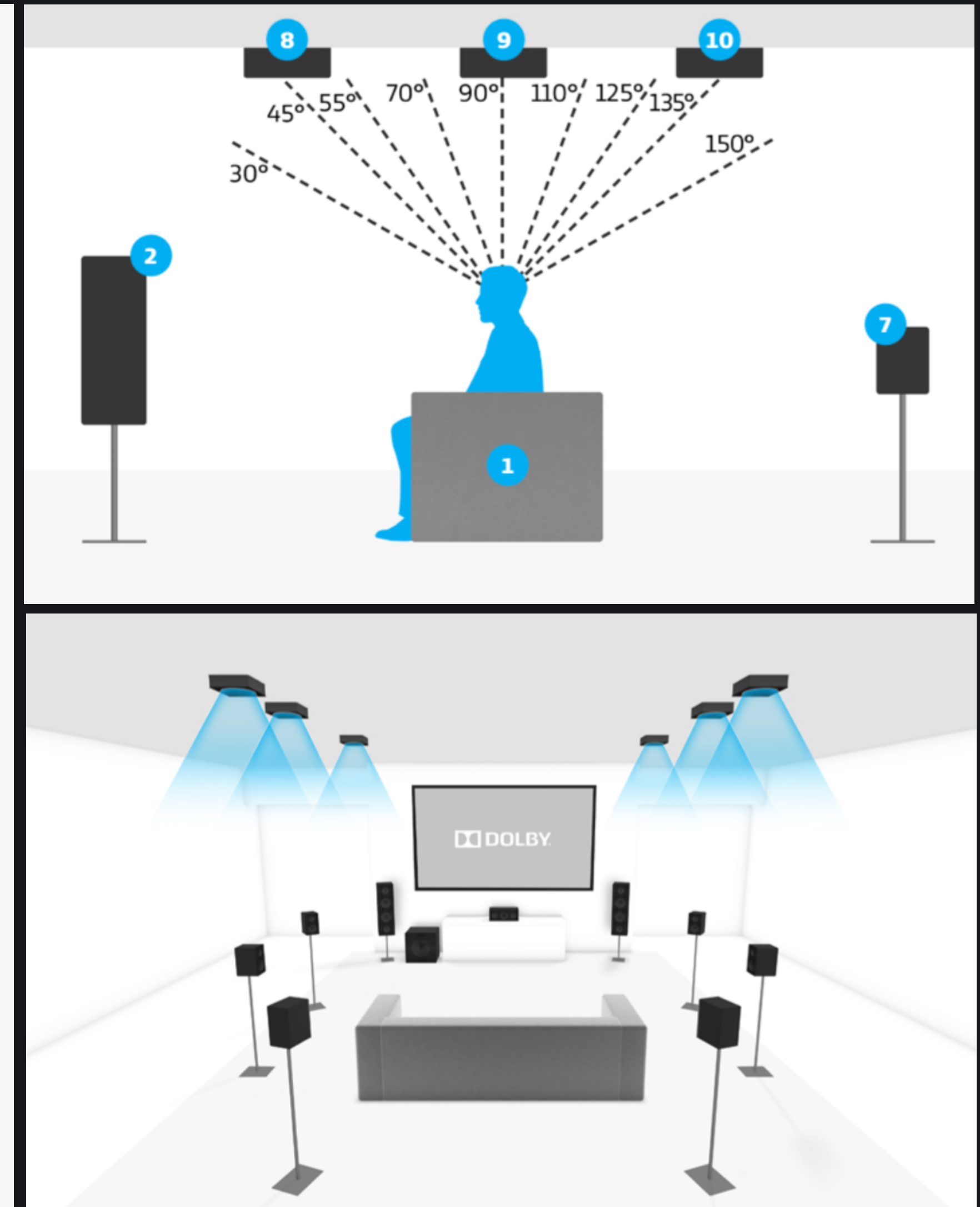
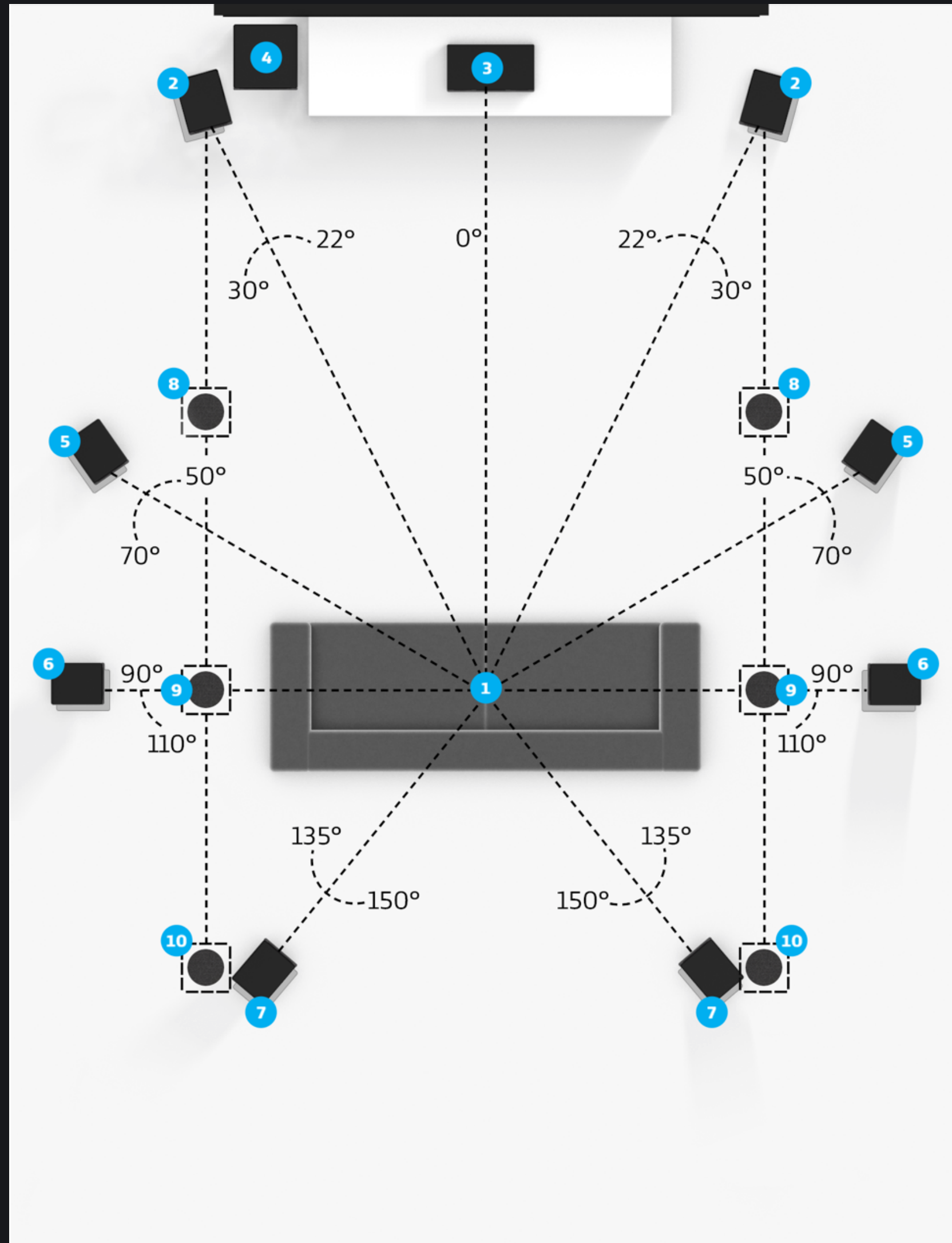
front down-firing  
back up-firing



Atmos enabled  
surround speakers  
(up-firing)



# Home Theater 9.1.6 down-firing





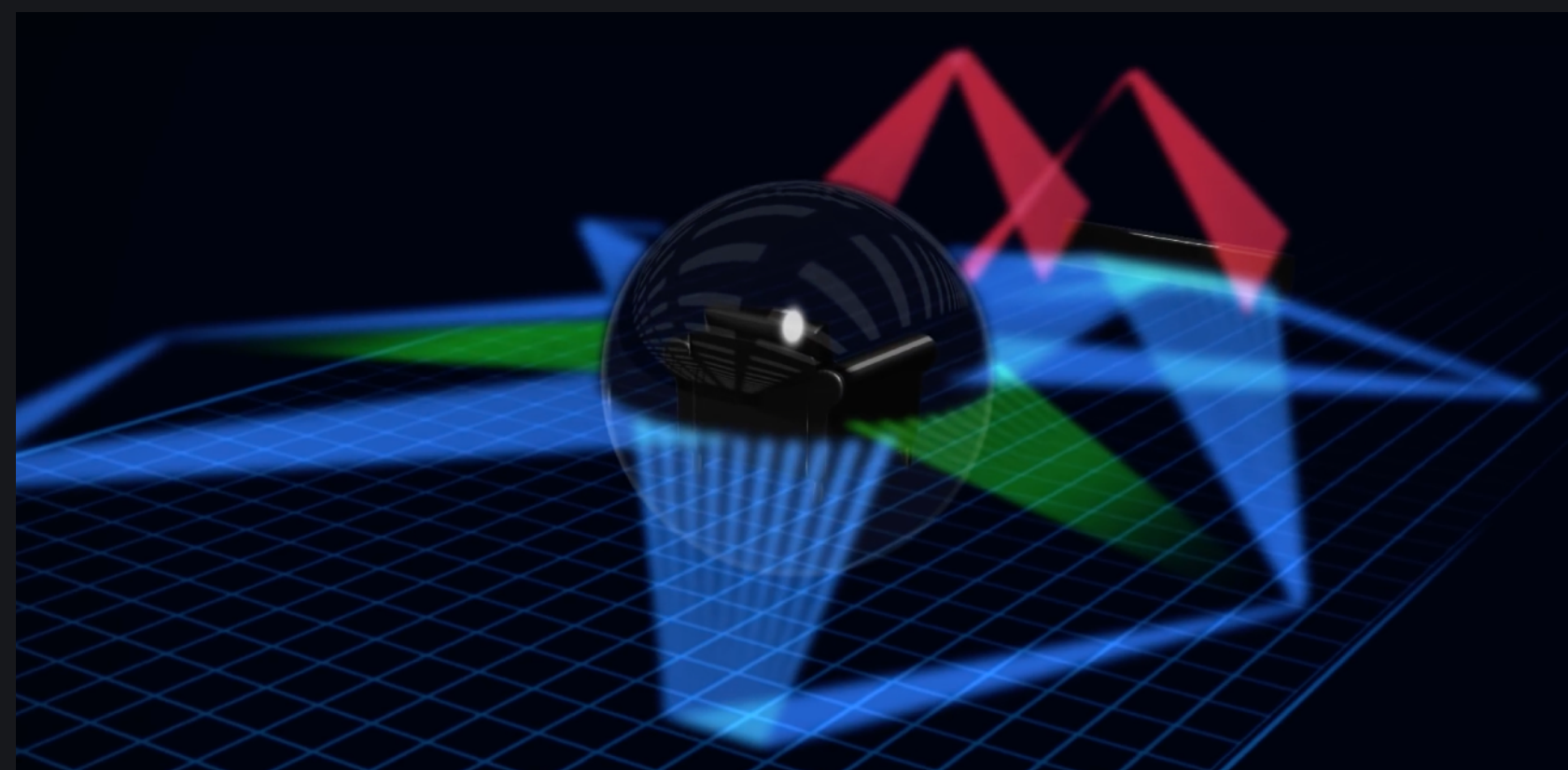
## Home Theater Atmos Soundbar

Atmos enabled  
surround speakers  
arrays  
(up-firing)

YSP-5600 PV

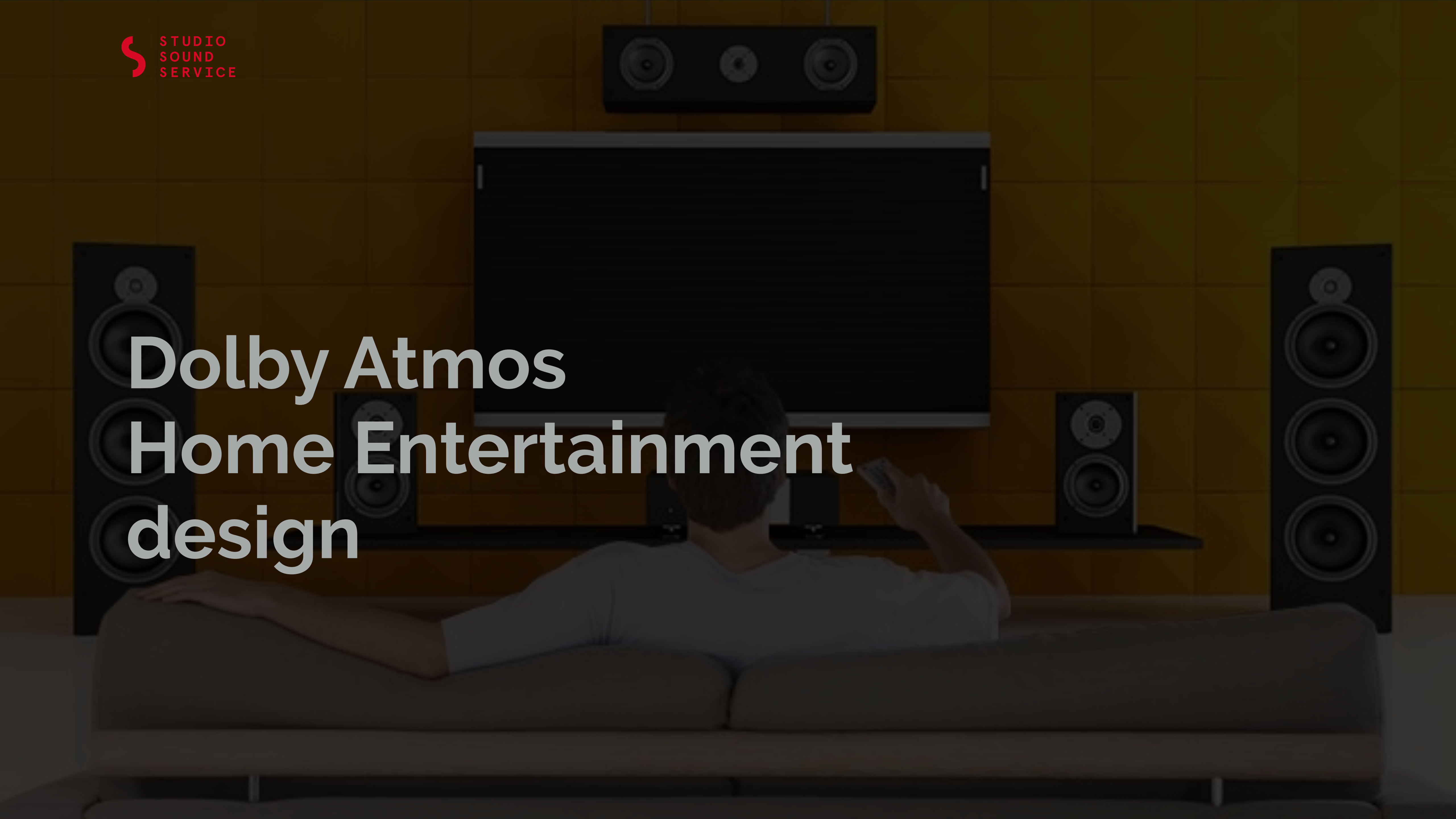


**YSP-5600**  
Digital Sound Projector





# Dolby Atmos Home Entertainment design





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## Dolby Atmos Home Entertainment Requirements

- A. Room Volume > 28 m<sup>3</sup>  
(> 3.6x3.3x2.4 m)  
*Room > 58 m<sup>3</sup> may be more practical!!!*
- B. Acoustic treatment like a control room.
- C. If you use up-firing speakers, ceiling must be reflective.

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 DARDT Excel file from Dolby with specs  
(Dolby Atmos Room Design Tool)



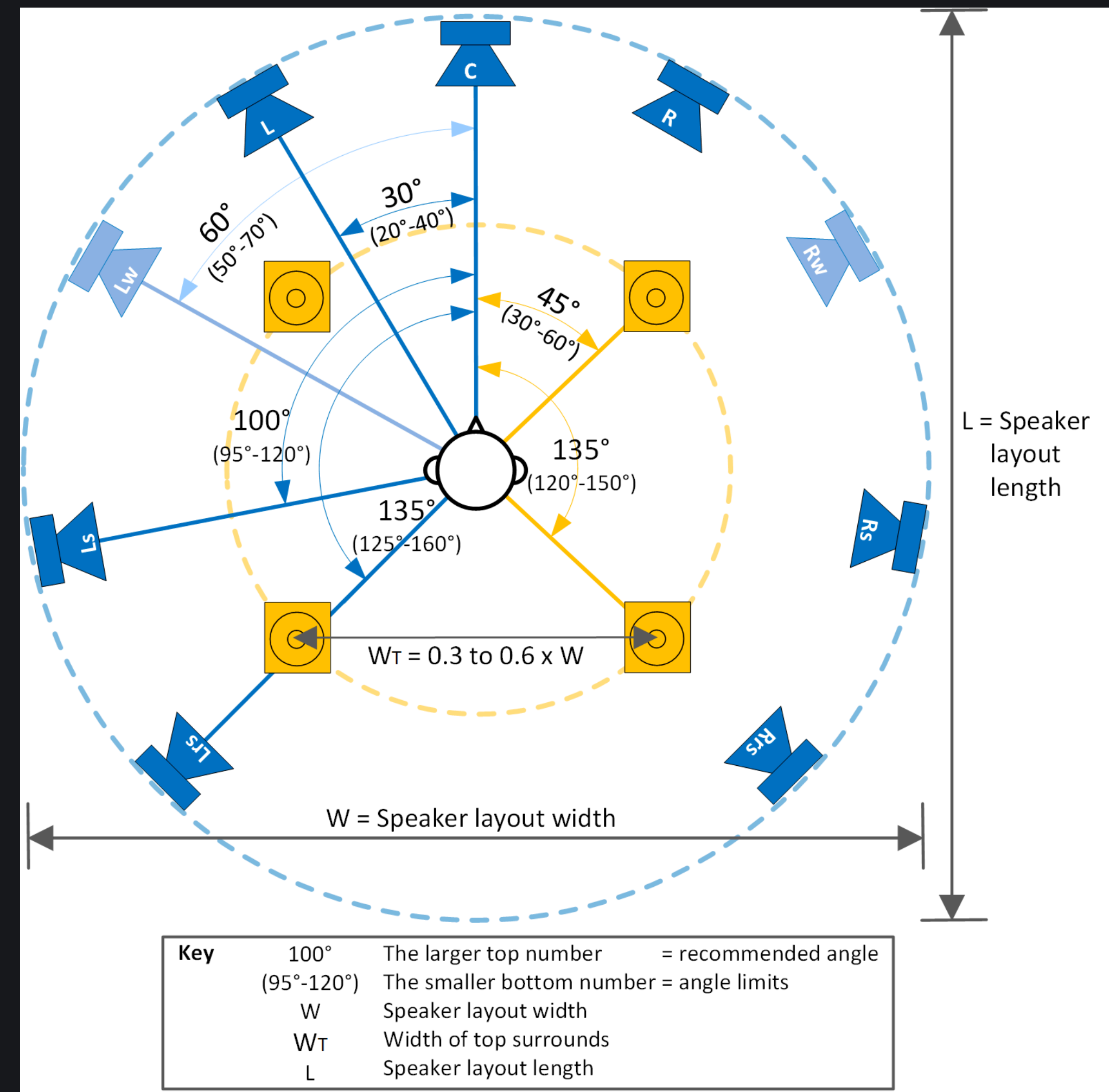
## Dolby Atmos Home Entertainment Arrangement of Speakers

### A. Basing on **ITU-R 775-3**:

- LCR 30+30°
- Ls 100° (95÷120)°
- Lrs 135° (125-160)

### B. Speakers equidistant from the listening position, but this is not always possible. —> delay and level calibration

→ ITU standards are closer to the consumer experience so Dolby uses them for HE arrangement





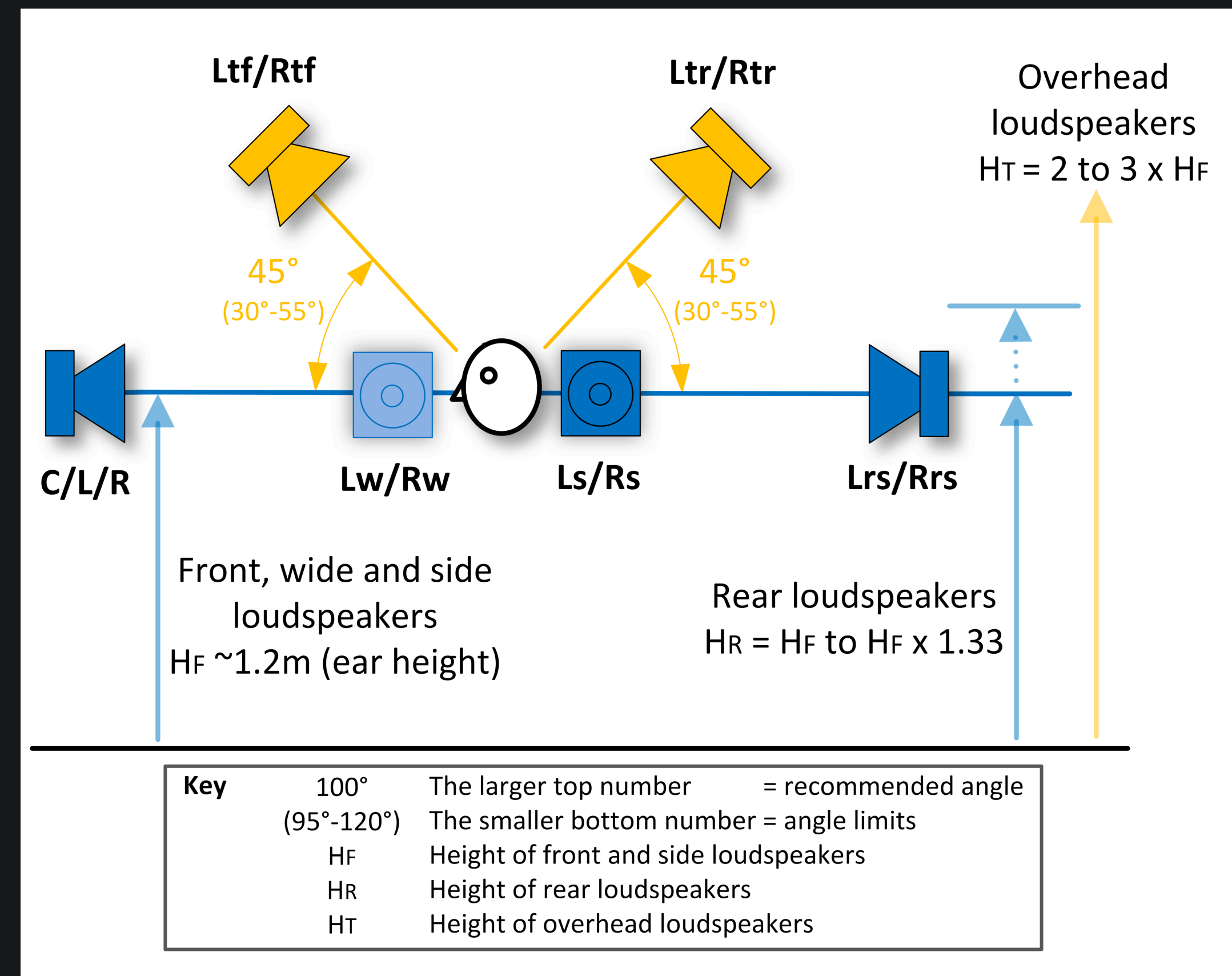
## Dolby Atmos Home Entertainment Arrangement of Speakers

### A. Speakers height (ITU-R BS 1116-1):

- LCR + Ls/Rs  $\rightarrow$  ( $H_F$ )  
at ear-level (120 cm), *if possible*
- Lrs, Rrs  $\rightarrow$  ( $H_R$ )  
at ( $H_F \div H_F \times 1.33$ ) so (120÷160 cm)

### B. Ceiling speakers:

- the overhead side-to-side separation should be 0.3 to 0.6 of the width  $W$  of the overall layout.
- the height  $H_T$  must be 2 ÷ 3 times the floor speaker height  $H_F$  (*i.e. 240-360cm*).
- the angle towards the listening point must be  $45^\circ$  (*adjusted 30÷55*)°.



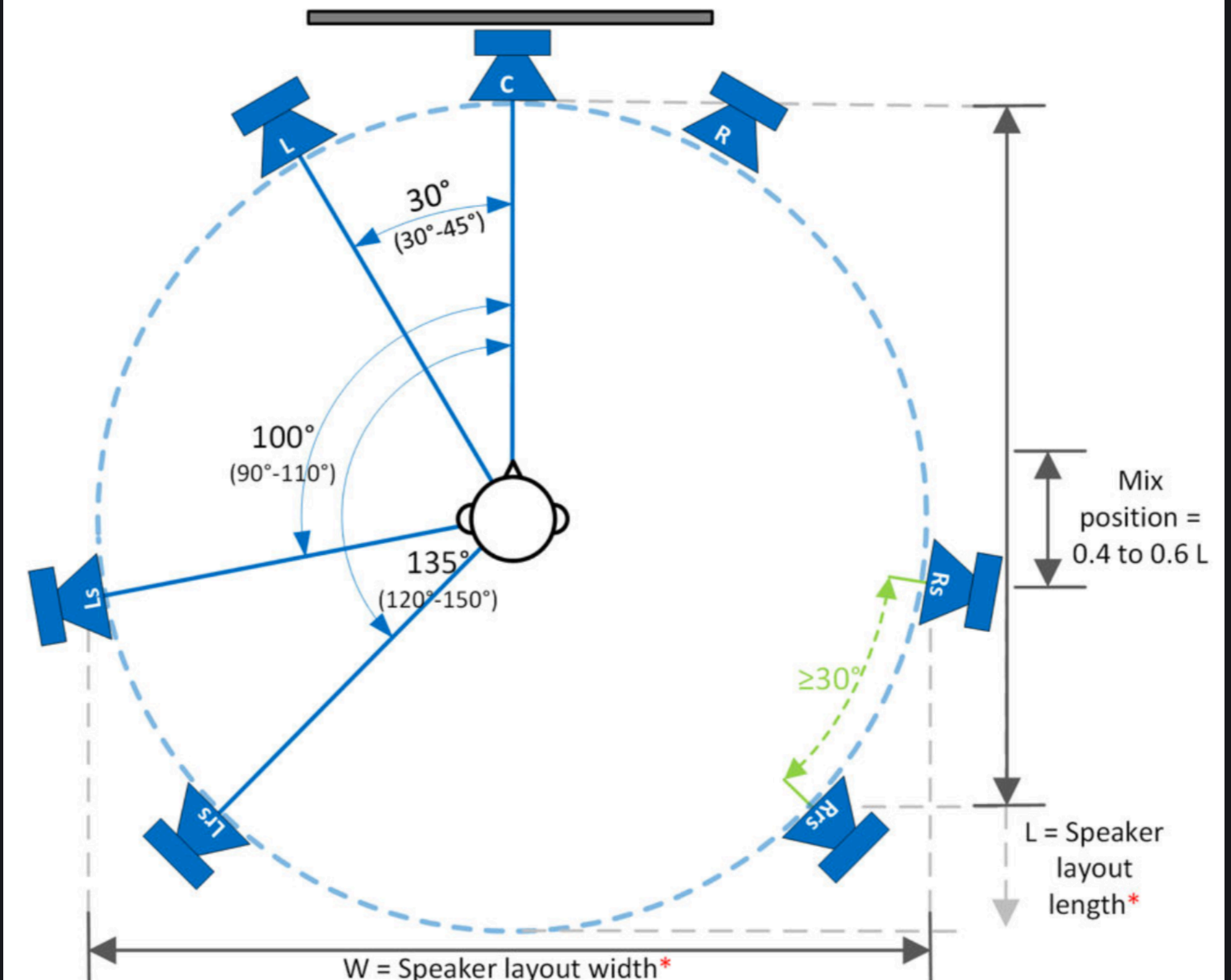


# Dolby Atmos HE Configurations

## 1. Equidistant Layout

- 2/3 Mix position
- suitable more for: Soundtracks composing, QC, music applications

Figure 1: Equidistant layout plan view showing screen and surround speaker positions



<b>Key</b>	Ls/Rs	Left/right side surround
	Lrs/Rrs	Left/right rear surround
	100°	The larger top number shows recommended angle
	(95°-120°)	The smaller bottom number shows angle limits
	W	Speaker layout width
	L	Speaker layout length
	≥n°	Minimum separation angle
	*	Layout width/length: For circular layouts, use the circle diameter. For other configurations use the width/length between speakers.

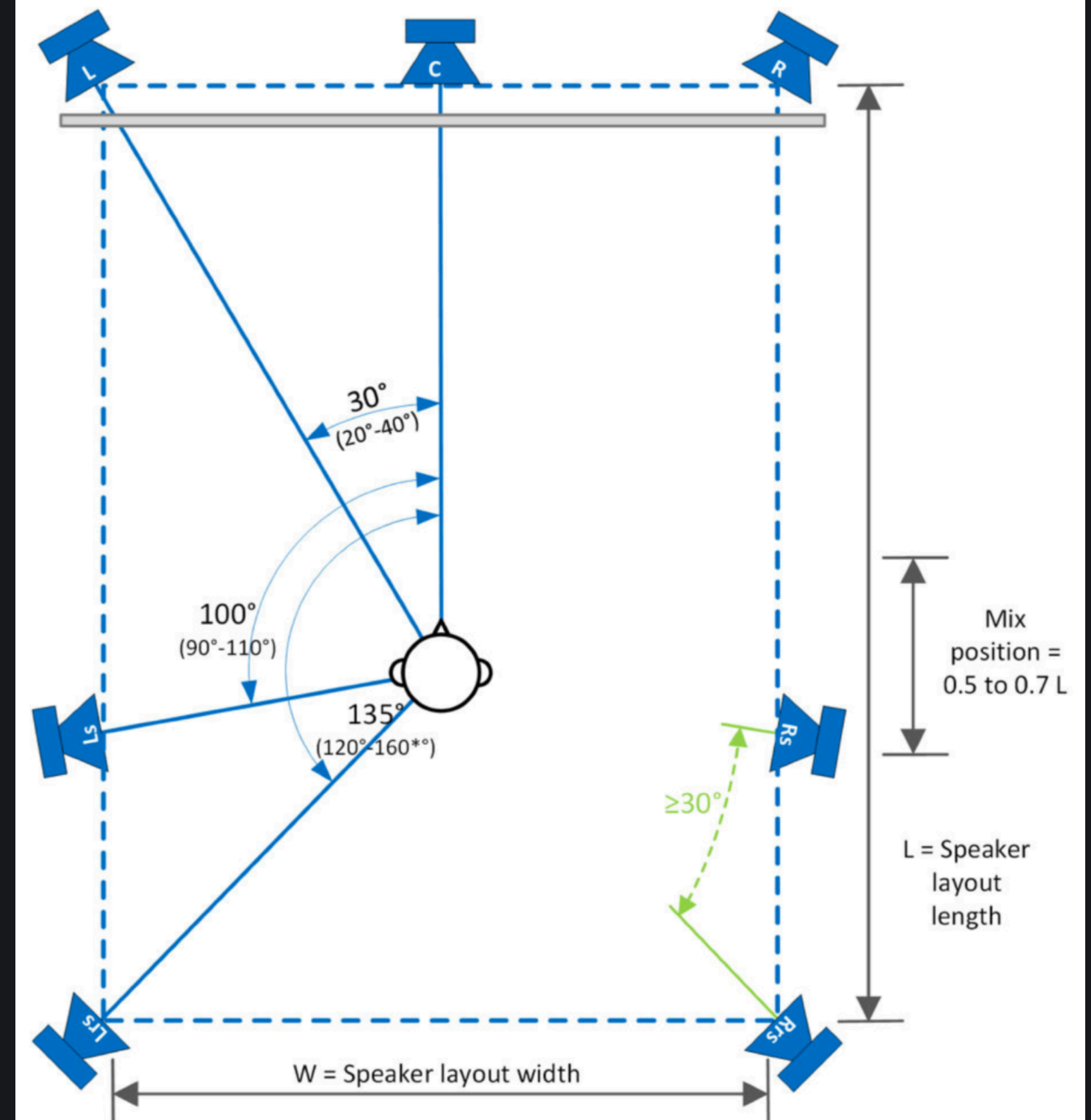


# Dolby Atmos HE Configurations

## 2. Orthogonal layout

- 2/3 Mix position
- suitable more for: TV mix room

Figure 2: Orthogonal layout plan view showing screen and surround speaker positions



<b>Key</b>	Ls/Rs	Left/right side surround
	Lrs/Rrs	Left/right rear surround
	100°	The larger top number shows recommended angle
	(95°-120°)	The smaller bottom number shows angle limits
	W	Speaker layout width
	L	Speaker layout length
	*	120°-150° preferred but 160° is acceptable to enable rear wall positioning
	≥n°	Minimum separation angle



## Dolby Atmos Home Entertainment Calibration

- A. Calibration from 79 to 82 dB (C) with a pink noise RMS at -20 dBFS for Game: 75 dB
- B. each speaker must be calibrated to 79 dB(C) and each speaker must be able to play 99 dB(C) at the listening point with a 102 dB(C) option for rooms that need more headroom.
- C. LFE +10 dB *ITU-R BR-1384*
- D. Calibration and Target Curve:
  - **room bigger than 125 m<sup>3</sup>**  
SMPTE 202: 2010 X-Curve  $\pm 3$  dB (100÷16k) Hz
  - **room smaller than 125 m<sup>3</sup>**  
the X-Curve slope 2kHz may be reduced or the knee-point may be moved up to 4 kHz, 8 kHz or even higher in some cases



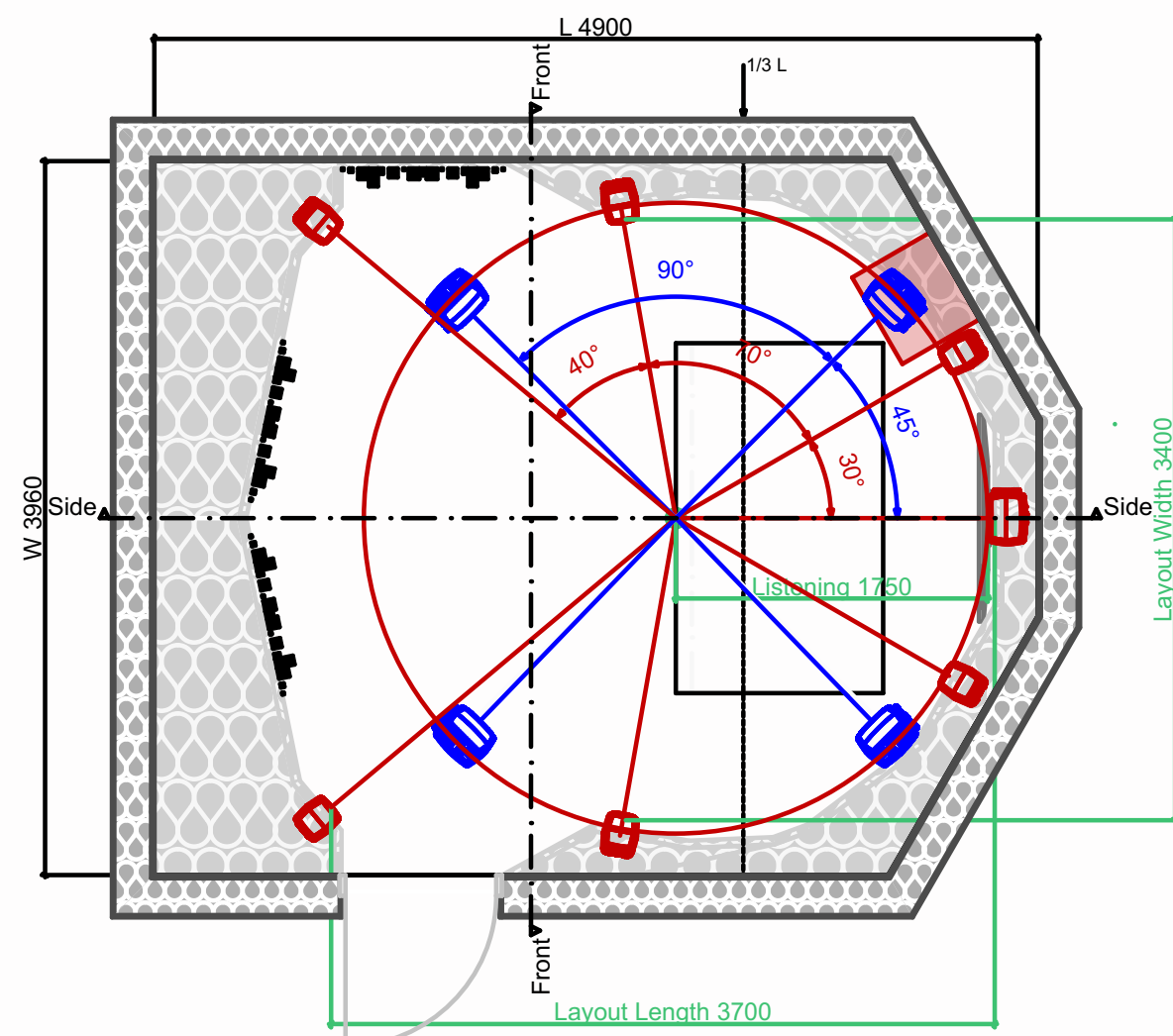
# Genelec + Dolby guidelines

Work in progress!!!



Small Equidistant

1:50



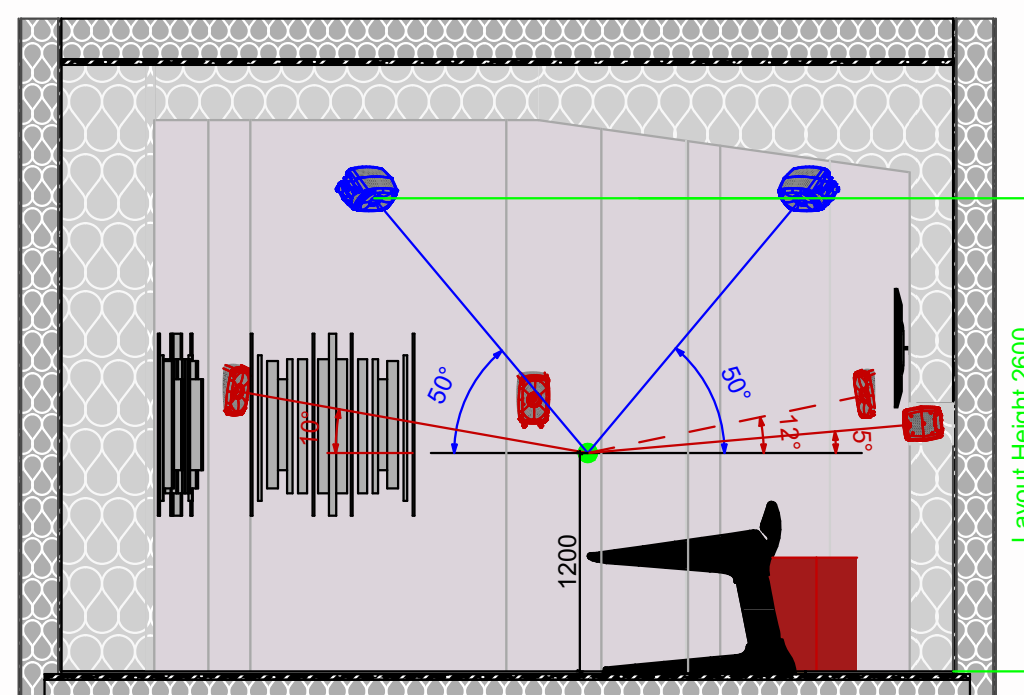
- Area  $\approx 18 \text{ m}^2$
- Volume  $\approx 60 \text{ m}^3$
- **Reproduction System: 7.1.4**  
with listening position at  $1/3 \text{ L}$   
*small mixing room, music, rec/composing*

- Front Speakers (L - C - R):  
Genelec 8331 SPL @ listener: 105 dBC
- Surround Speakers (Ls - Rs - Lw - Rw):  
Genelec 8331 SPL @ listener: 105 dBC
- Ceiling Speakers (Lfc - Rfc - Lrc - Rrc):  
Genelec 8331 SPL @ listener: 105 dBC
- Subwoofer:  
Genelec 7370A SPL @ listener: 117 dBC

Small Equidistant

Side

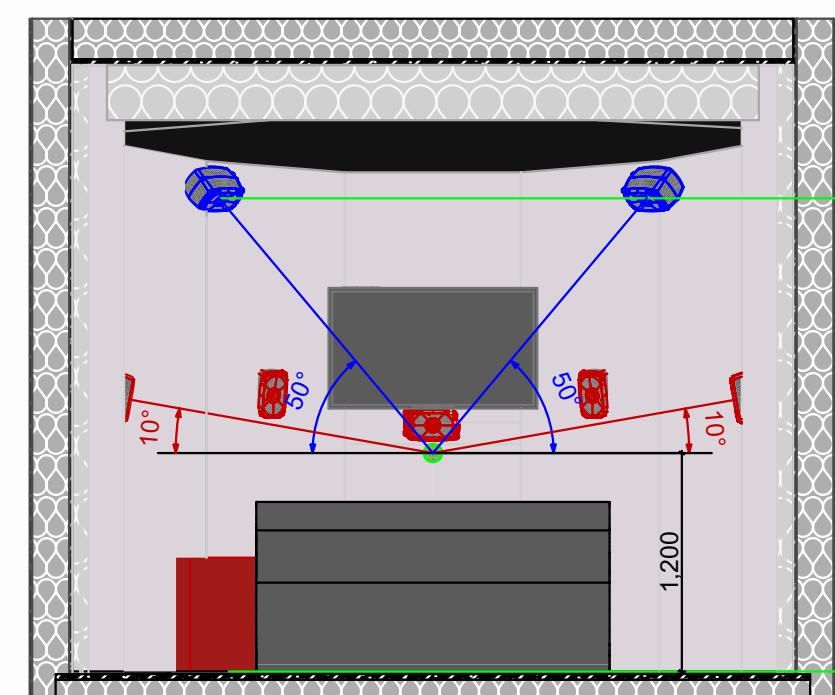
1:50



Small Equidistant

Front

1:50



**Genelec for Dolby Atmos**

Acoustic Design by:

Donato Masci  
+39 335 8233579

Giacomo Arcangioli  
+39.349.6438158

Cecilia Torracchi  
+39.333.8628738

Drawing Scale

**1:50**

Layout ID

- ears height speaker
- ceiling height speaker

Studio Sound Service s.r.l.  
Via Torricella 22a, 50023 Impruneta (FI) Italy

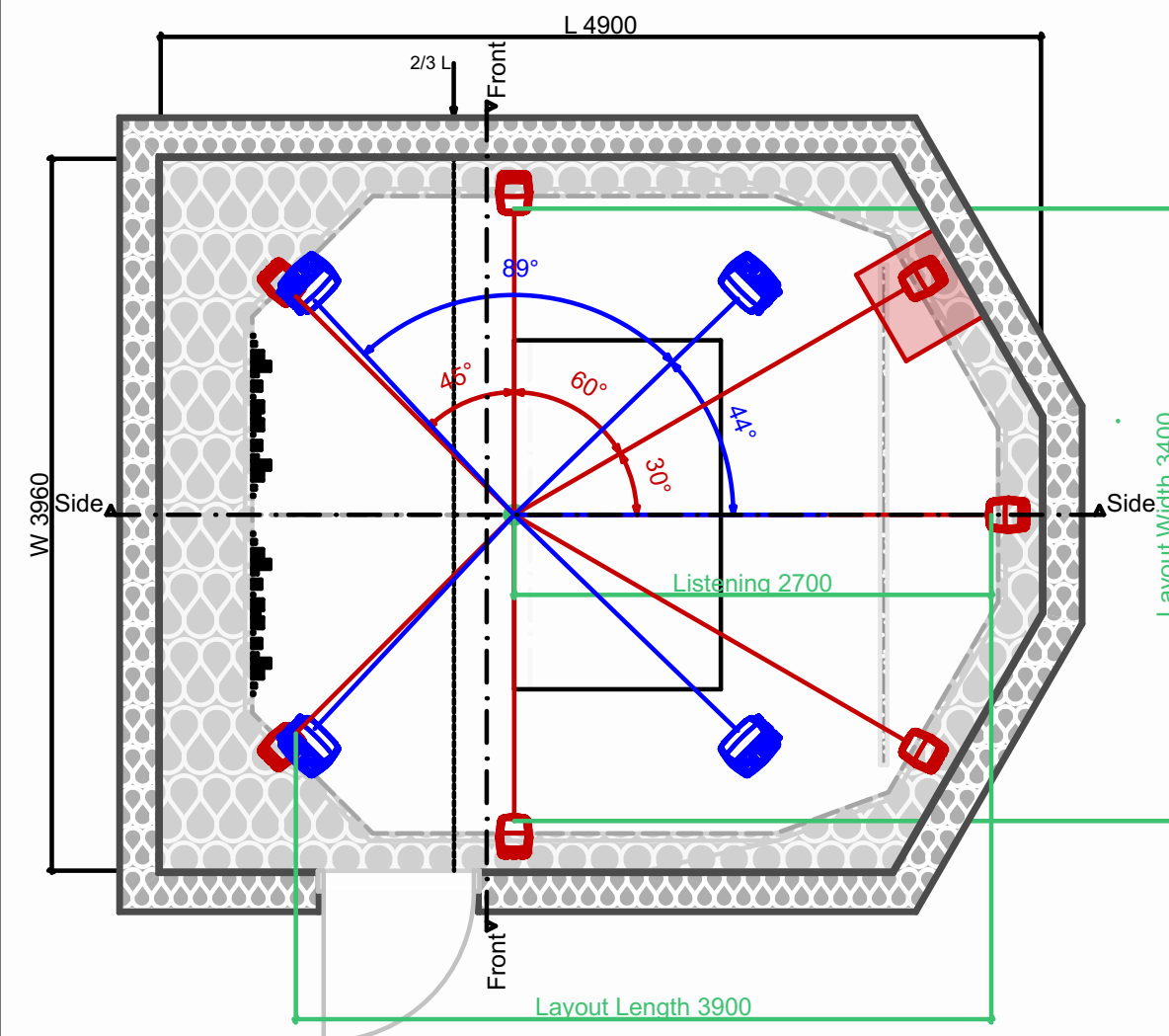
info@studiosoundservice.com  
Tel. +39 055 2020574  
www.studiosoundservice.com





Small Orthogonal

1:50



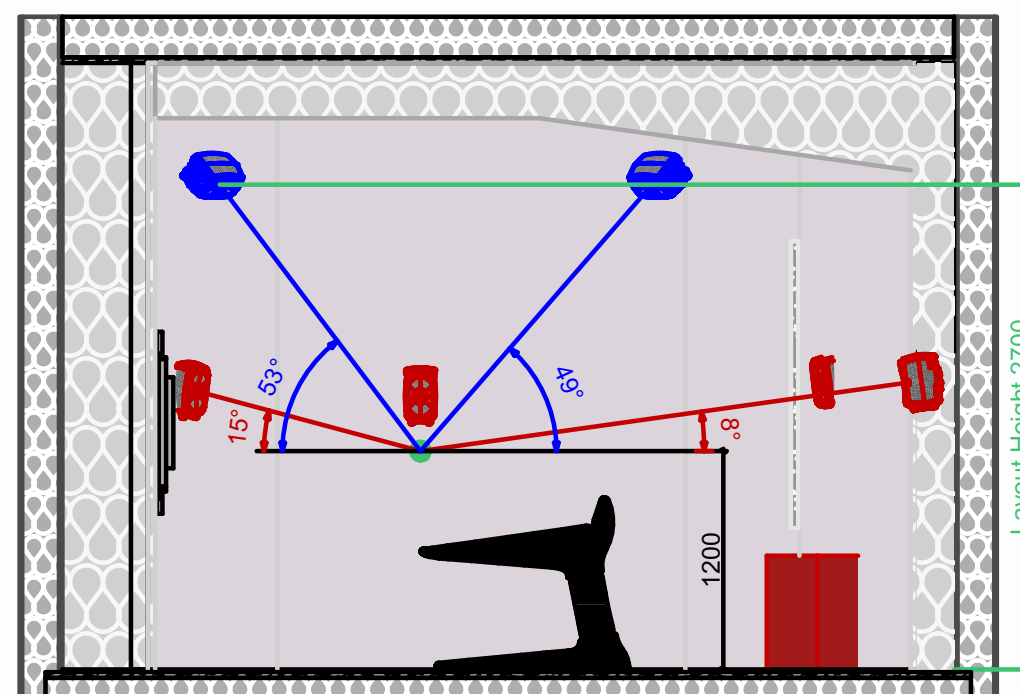
- Area  $\approx 18 \text{ m}^2$
- Volume  $\approx 60 \text{ m}^3$
- **Reproduction System: 7.1.4**  
with listening position at  $2/3 L$   
*small mixing room, games, rec/composing*

- Front Speakers (L - C - R):  
Genelec 8331 SPL @ listener: 105 dBC
- Surround Speakers (Ls - Rs - Lw - Rw):  
Genelec 8331 SPL @ listener: 105 dBC
- Ceiling Speakers (Lfc - Rfc - Lrc - Rrc):  
Genelec 8331 SPL @ listener: 105 dBC
- Subwoofer:  
Genelec 7370A SPL @ listener: 117 dBC

Small Orthogonal

Side

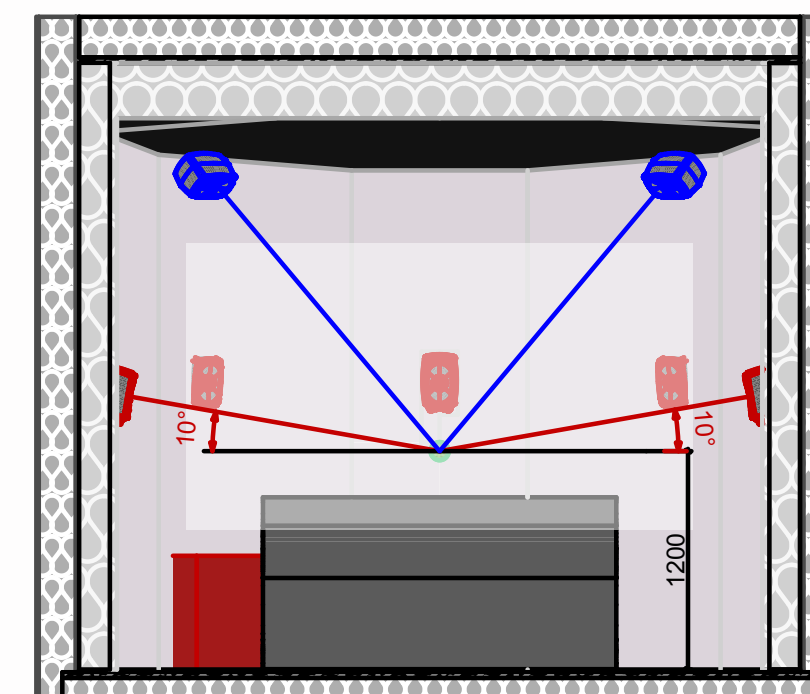
1:50



Small Orthogonal

Front

1:50



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Drawing Scale

**1:50**

Layout ID

— ears height speaker  
— ceiling height speaker

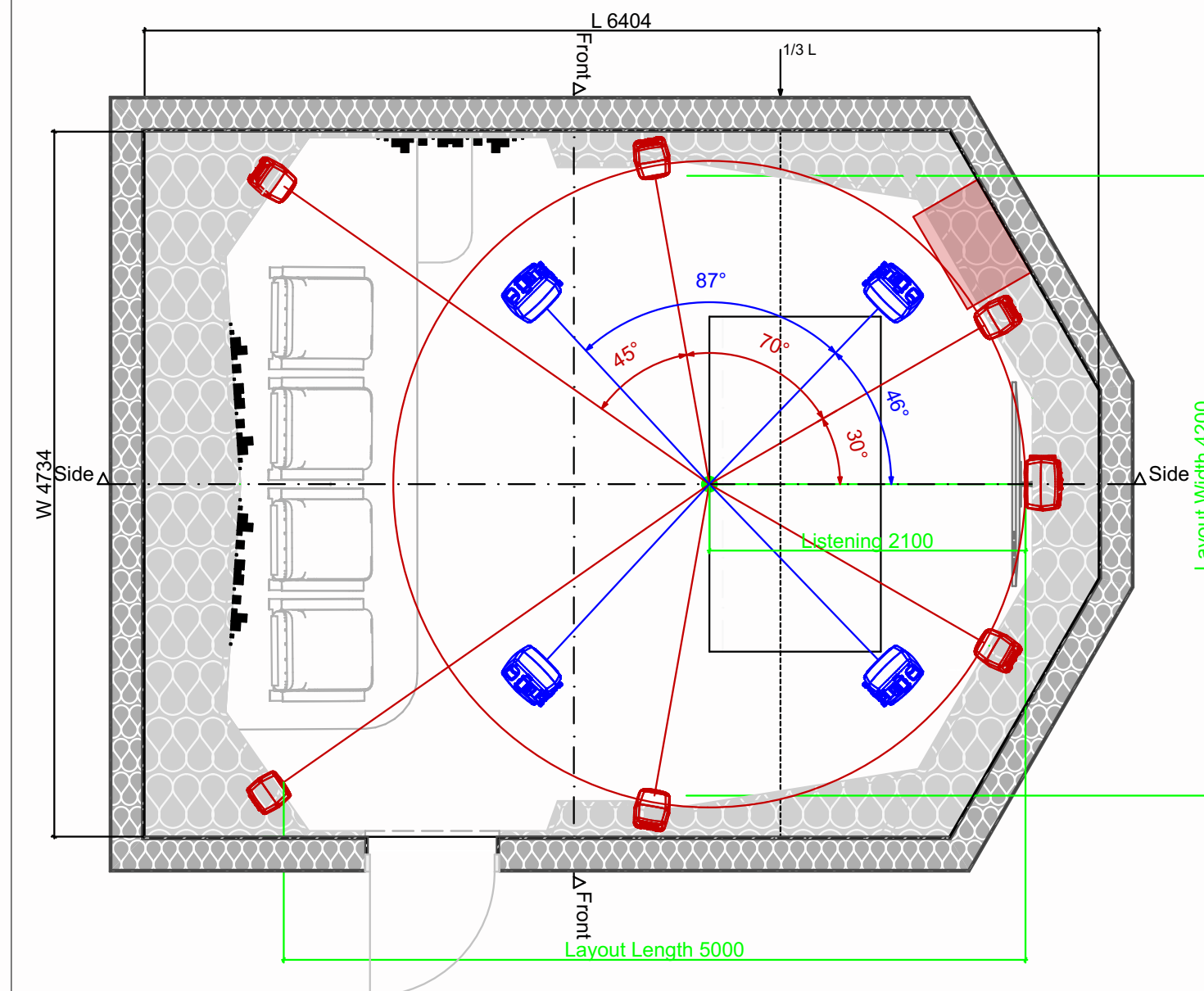
Studio Sound Service s.r.l.  
Via Torricella 22a, 50023 Impruneta (FI) Italy

info@studiosoundservice.com  
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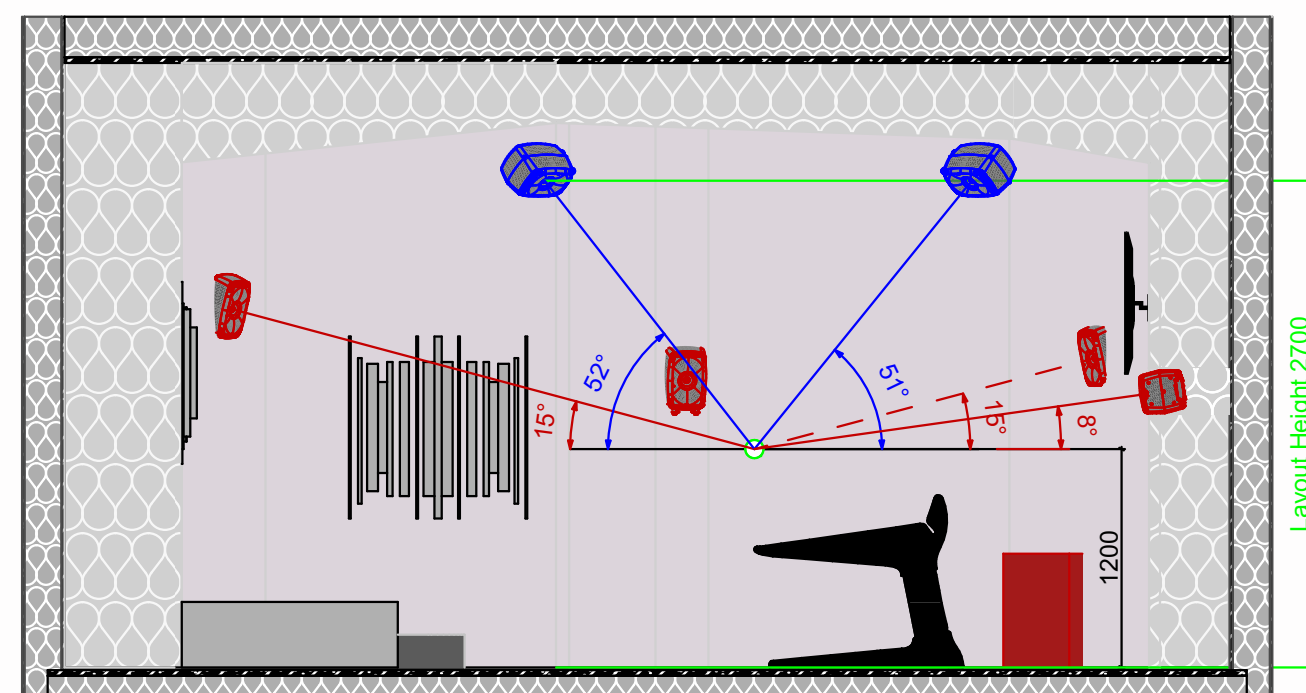
Medium Equidistant Plan 1:50



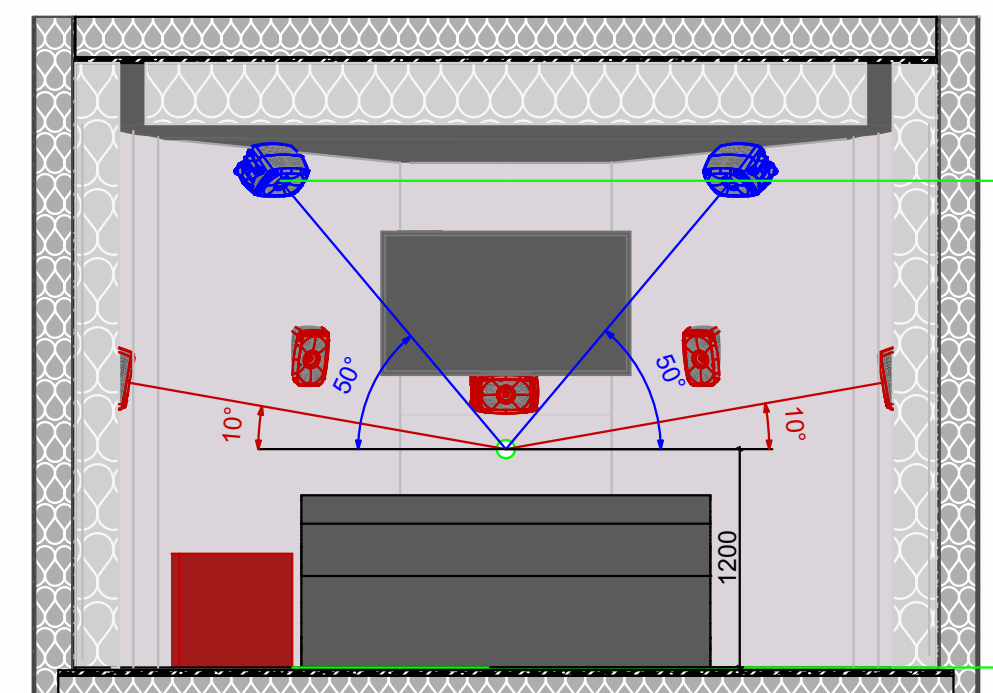
- Area  $\approx 29 \text{ m}^2$
- Volume  $\approx 96 \text{ m}^3$
- **Reproduction System: 7.1.4**  
with listening position at  $1/3 L$   
*medium mixing room, music, rec/composing*

- Front Speakers (L - C - R):  
Genelec 8351 SPL @ listener: 111 dBC
- Surround Speakers (Ls - Rs - Lrs - Rrs):  
Genelec 8341 SPL @ listener: 109 dBC
- Ceiling Speakers (Lfc - Rfc - Lrc - Rrc):  
Genelec 8341 SPL @ listener: 109 dBC
- Subwoofer:  
Genelec 7380A SPL @ listener: 120 dBC

Medium Equidistant Side 1:50



Medium Equidistant Front 1:50



## Genelec for Dolby Atmos

### Acoustic Design by:

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Drawing Scale

**1:50**

Layout ID

— ears height speaker  
— ceiling height speaker

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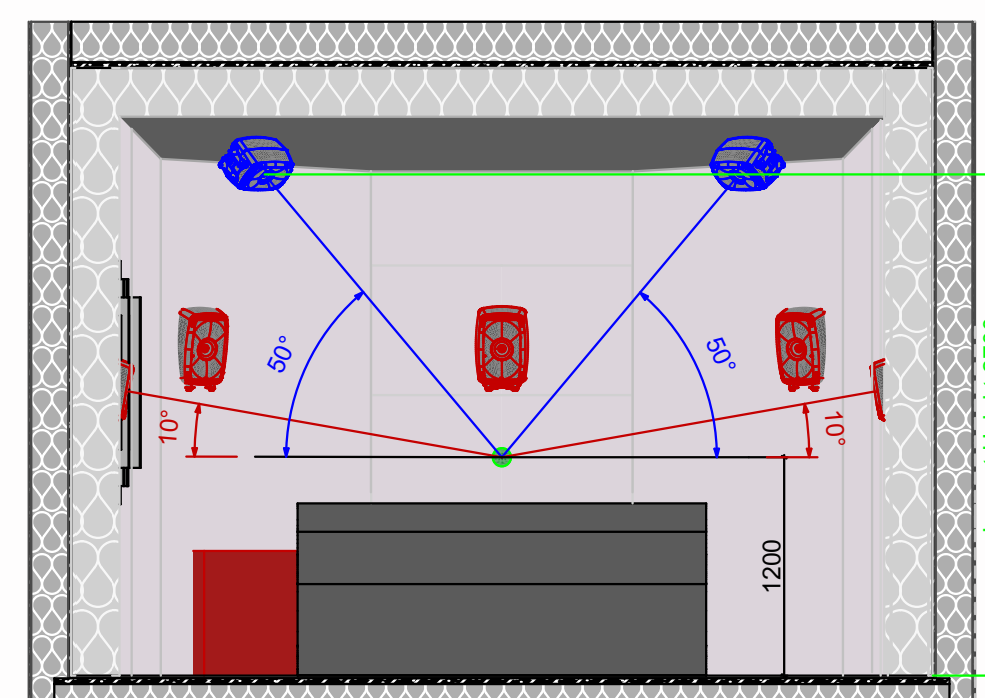




Diagram illustrating a car layout in a room with dimensions and angles:

- Room dimensions: L 6300, W 4700.
- Car dimensions: L 2000, W 1200.
- Angles:  $89^\circ$ ,  $70^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $35^\circ$ .
- Layout Length 4900.
- Listening 3400.
- Front V, Side V, Front V, Side V.
- Layout Width 4200.

- |                   |       |      |
|-------------------|-------|------|
| Medium Orthogonal | Front | 1:50 |
|-------------------|-------|------|



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### Drawing Scale

**1:50**

Layout ID

- ears height speaker
- ceiling height speaker

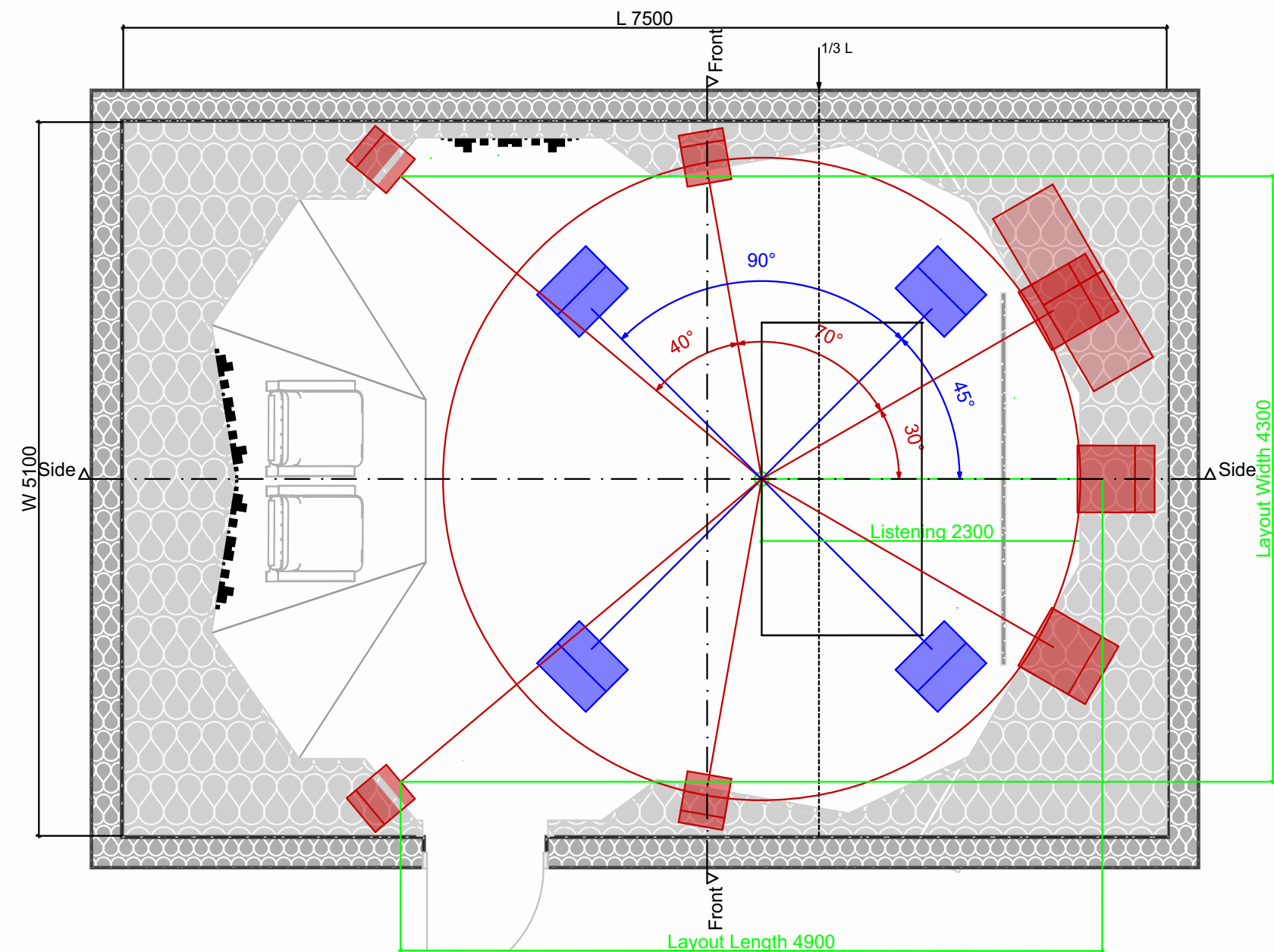
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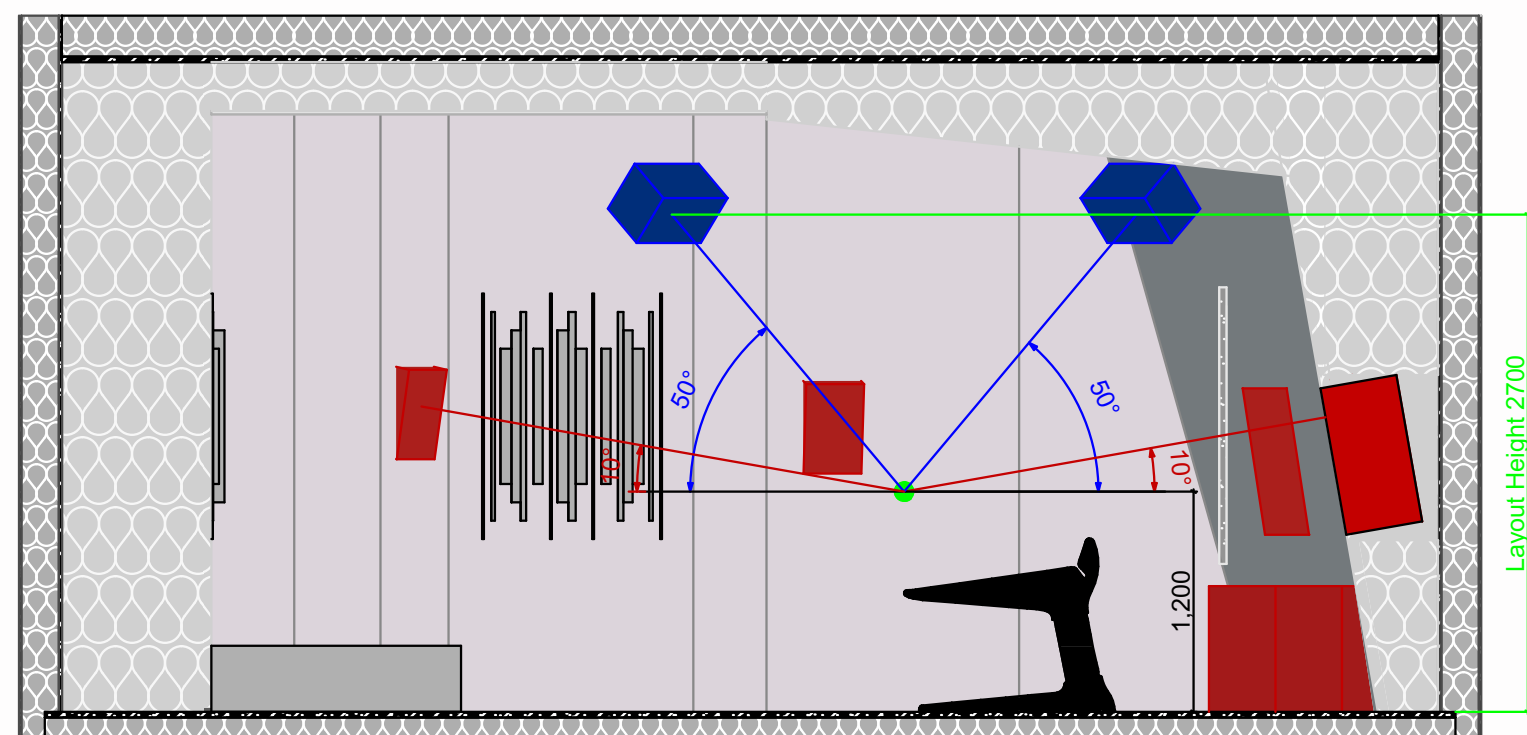
Large Equidistant Plan 1:50



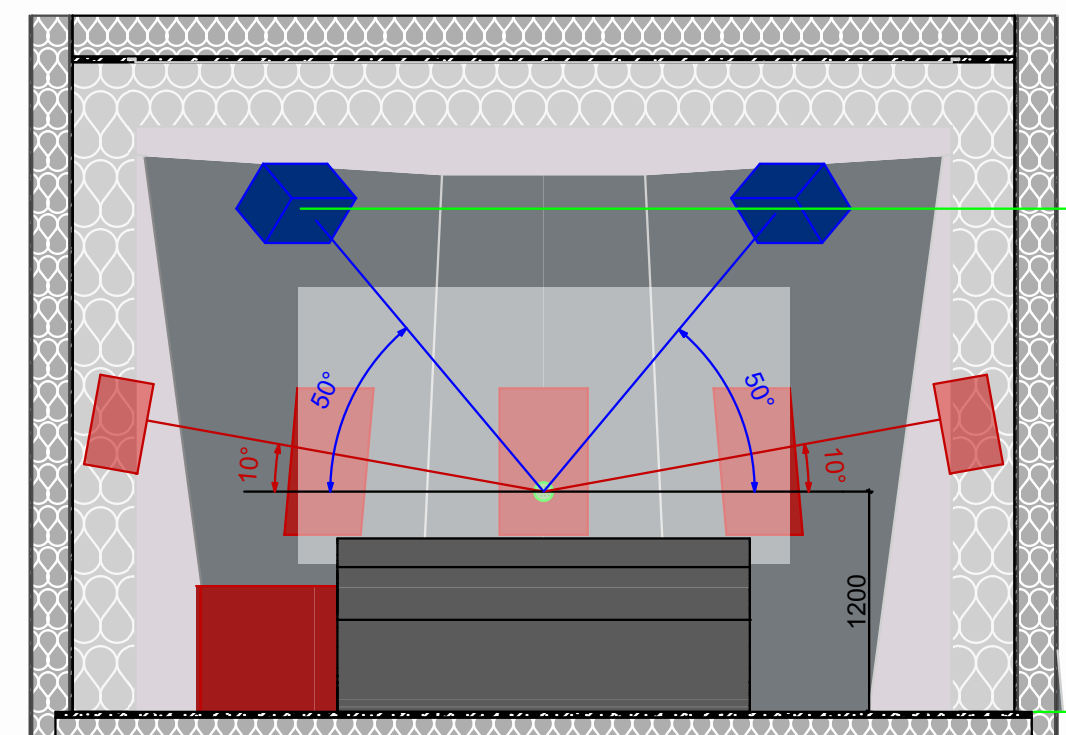
- Area  $\approx 50 \text{ m}^2$
- Volume  $\approx 190 \text{ m}^3$
- **Reproduction System: 7.1.4**  
with listening position at  $1/3 L$   
*big control room – soundtrack composers*

- Front Speakers (L - C - R):  
Genelec 1238A SPL @ listener: 120 dBC
- Surround Speakers (Ls - Rs - Lrs - Rrs):  
Genelec 1032C SPL @ listener: 113 dBC
- Ceiling Speakers:  
Genelec 1032C SPL @ listener: 113 dBC
- Subwoofer:  
Genelec 2x7380A SPL @ listener: 124 dBC

Large Equidistant Side 1:50



Large Equidistant Front 1:50



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Cecilia Torracchi  
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Drawing Scale

1:50

Layout ID

- ears height speaker
- ceiling height speaker

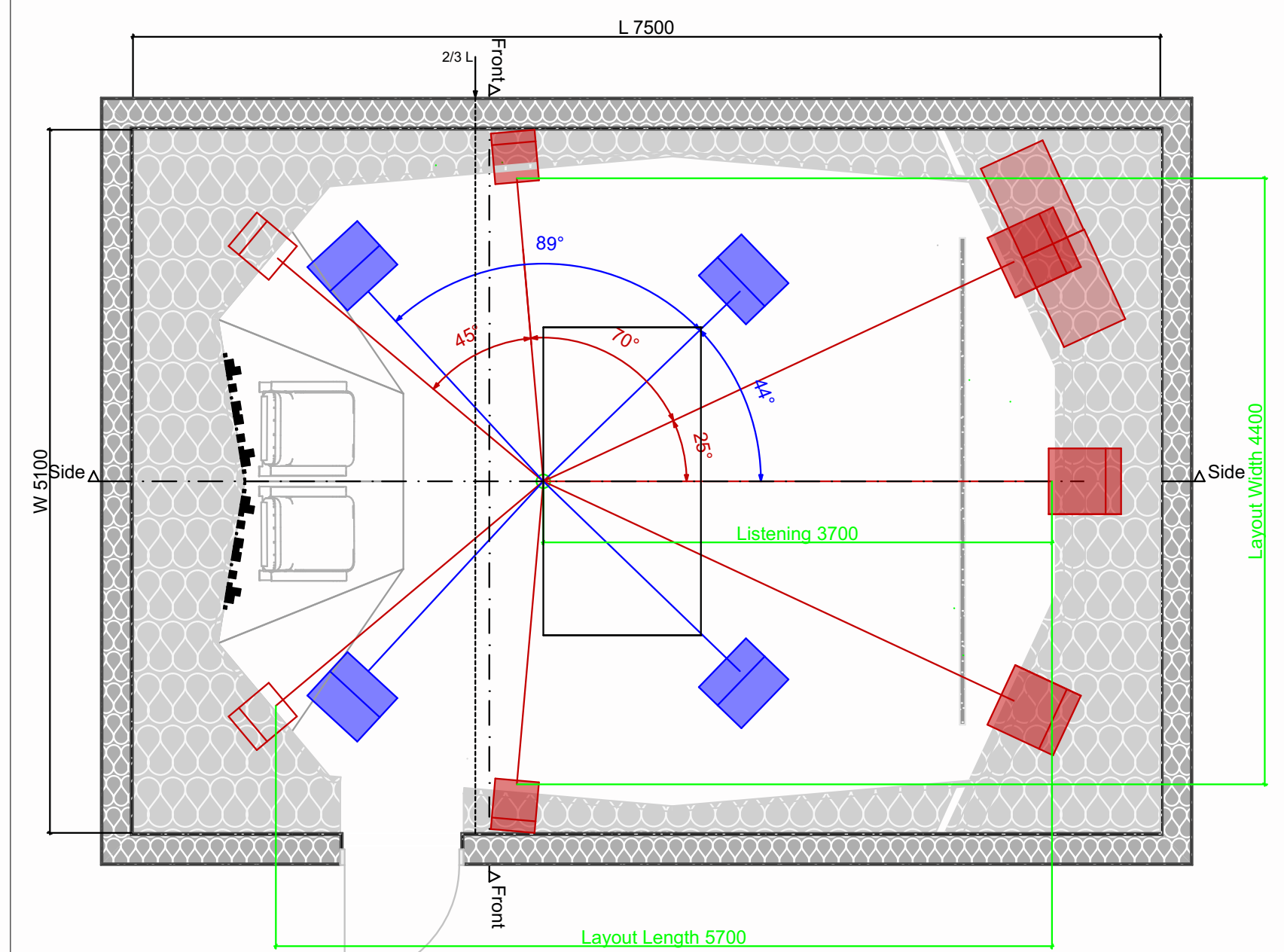
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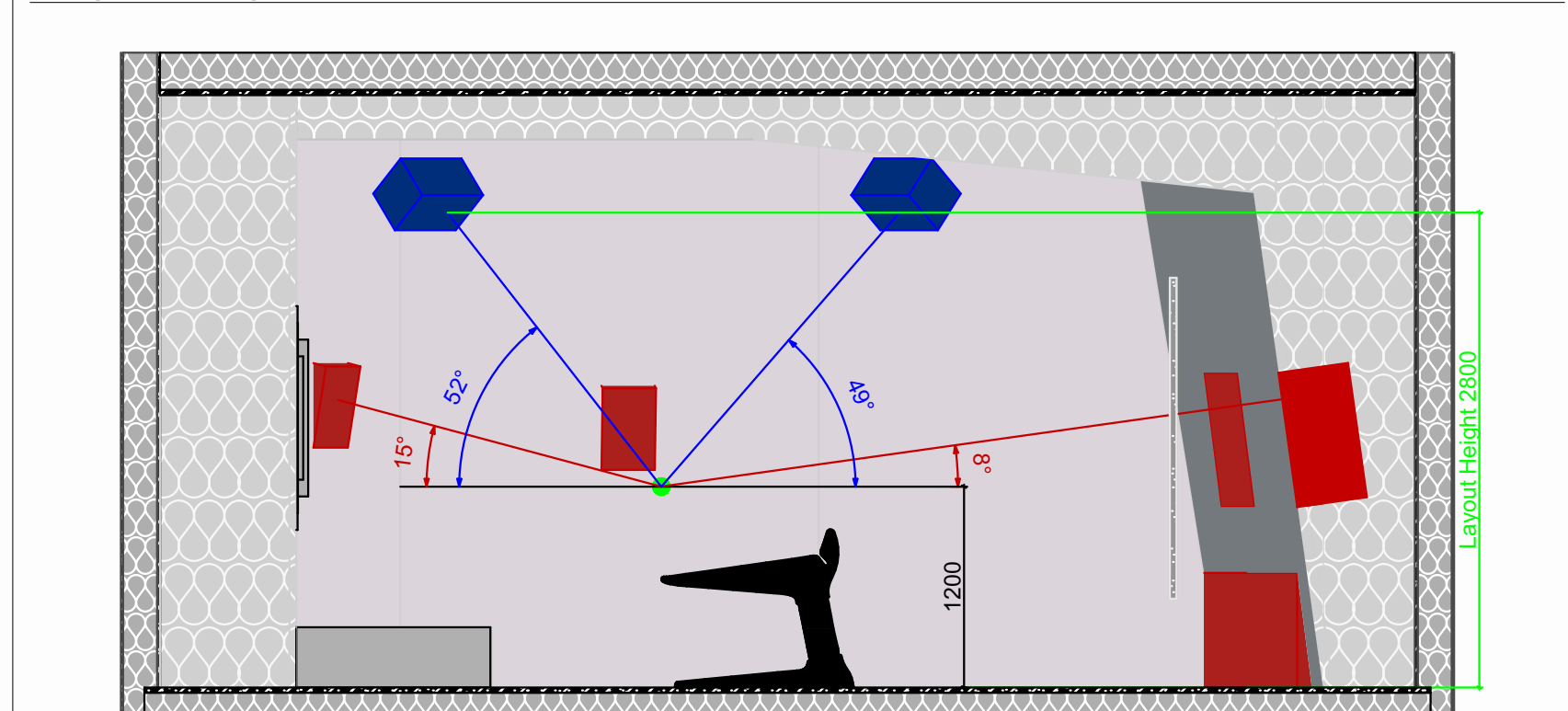




Large Orthogonal Plan 1:50



Large Orthogonal Side 1:50



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+39.333.8628738

Drawing Scale

1:50

Layout ID

ears height speaker  
ceiling height speaker

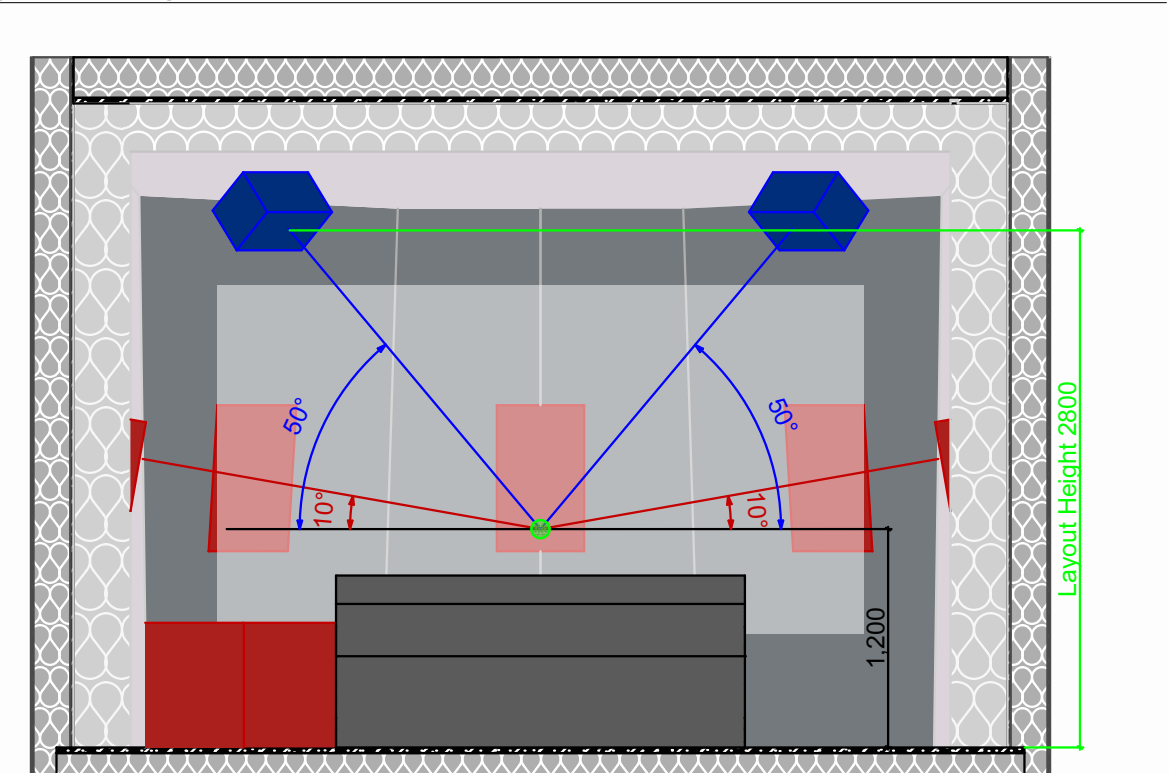
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- Area  $\approx 50 \text{ m}^2$
- Volume  $\approx 190 \text{ m}^3$
- **Reproduction System: 7.1.4**  
*with listening position at  $2/3 \text{ L}$*   
*mixing room (broadcast / cinema?)*
- Front Speakers (L - C - R):  
Genelec 1238A SPL @ listener: 116 dBC
- Surround Speakers (Ls - Rs - Lrs - Rrs):  
Genelec 1032C SPL @ listener: 113 dBC
- Ceiling Speakers:  
Genelec 1032C SPL @ listener: 113 dBC
- Subwoofer:  
Genelec 2x7380A SPL @ listener: 124 dBC

Large Orthogonal Front 1:50





## Problems found in practice about Dolby Home Entertainment design:

*basic rules of acoustics  
might apply to every kind of  
control room, but issues  
arise depending on the  
required integration  
between audio and video*

- A. **Door position:**  
if the surrounds have to be at about 120÷150 cm height, the door position is a problem (this was not a problem for cinema mixing room because the surrounds are generally higher).
- B. **TV LCD vs. Projection screen:**  
how to integrate front speakers with the screens?  
upper or lower?  
side within the image or outside of it?
- C. **1/3 or 2/3 of the room length?**  
these points came from the room acoustics (better room modes distribution), but the choice depends also on room functionality:
  - > **1/3 music studios (also soundtrack composers)**
  - > **2/3 only mixing (cinema & broadcast)**



## Conclusioni:

- A. Le sale Dolby Atmos HE sono nate per le applicazioni legate all' "entertainment" come broadcast (TV), il gaming etc.  
**non si deve fare l'errore di pensare che una sala di questo tipo sia un "surrogato" di una sala mix cinematografica**
- B. Le differenze tra le sale mix cinematografiche sono:
  - A. le dimensioni (non più di 35÷40 m<sup>2</sup>)
  - B. i posti a sedere (per le dimensioni, non potranno essere più di due file (una davanti e una dietro alla console)
  - C. gli ascolti (Genelec vs JBL?)
- C. Le sale Equidistant possono avere casse con tweeter, le sale Orthogonal è meglio che abbiano casse con horn (>3.5m)
- D. Curva X? o no? **dipende solo dalla distanza, non dall'applicazione.**



# Case studies



# FOX UK

2015  
Fox Networks UK

2 Control room  
1 Vocal Booth  
1 Sala Post AVID







# Nat Geo

2015  
Fox Networks UK

National Geographic control room  
branded





# Vocal

2015  
Fox Networks UK

...con il Vocal-Booth sulla destra







# FOX

2015  
Fox Networks UK

Fox Branded  
ha il Vocal-Booth a sinistra







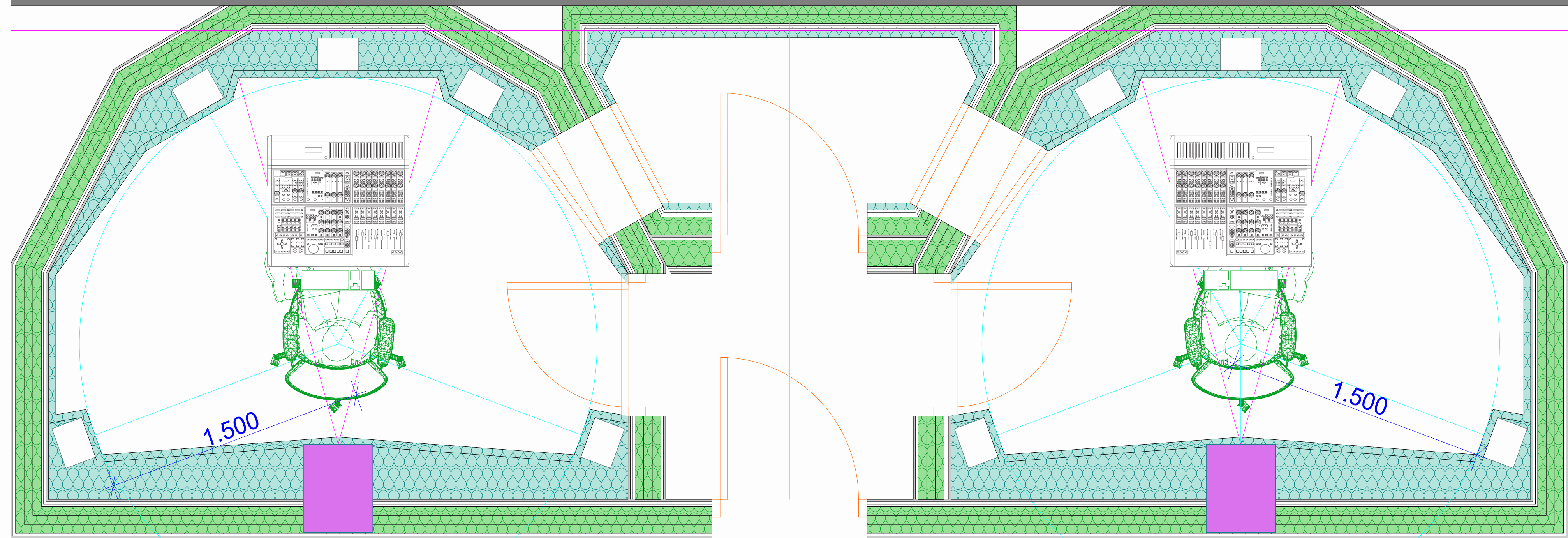
# CHALLENGE

2015  
Fox Networks UK

A challenge:  
little space and proximity







1

## The binoculars revolution

The room shape we invented (to best occupy all the space) was similar to binoculars, with two perfectly symmetrical rooms that share the Vocal Booth.

2

## The basic geometry

the geometry is optimized in order to keep the rooms with the necessary listening systems in the smallest possible space and to offer the best sound experience.

3

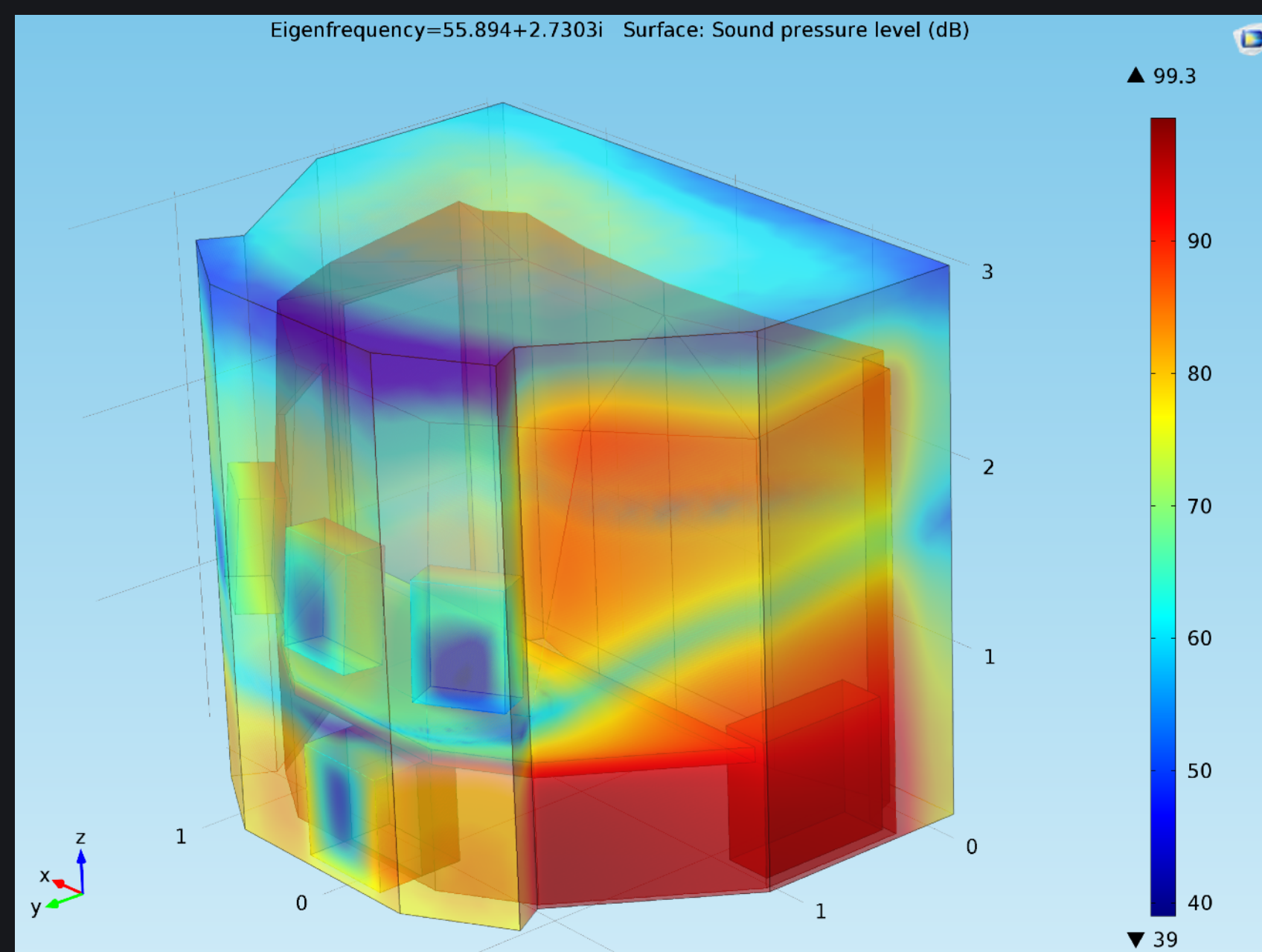
## The entrance room

The Entrance Room increases privacy for processing and further separates the audio rooms from the open office.





Is the FEM simulation useful for recording studio design?



- A. FEM software is a **truly valuable tool for acoustic design**. It provides considerable support to designers on a part of the spectrum range (**LF**) that we could not have much certainty on until now — unless you precisely adopt a predetermined design that you know works from trial-and-error.
- B. The major innovation is that with these simulation methods you can build rooms with a good listening experience in **unconventional situations** while also studying **alternatives and innovative acoustic treatments**.



# FOX München

2016  
Fox Networks DE

1 Control Room  
1 Vocal-Booth  
2 Post Avid rooms





# Vocal

2016  
Fox Networks DE

Vocal booth  
deep sea fabric prints





# FOX Roma

2018  
Fox Networks IT

4 Control Room  
2 Vocal (ISO) - Booth  
2 sale Post Avid

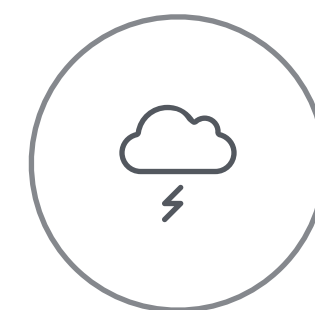


*Roma - Piazza San Silvestro*



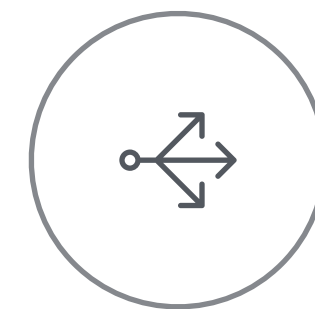


# Layout



## Critical issues

Historic building in the center of Rome.  
Four rooms very close to each other, important  
acoustic insulation.  
Set the geometries between the possible spaces.



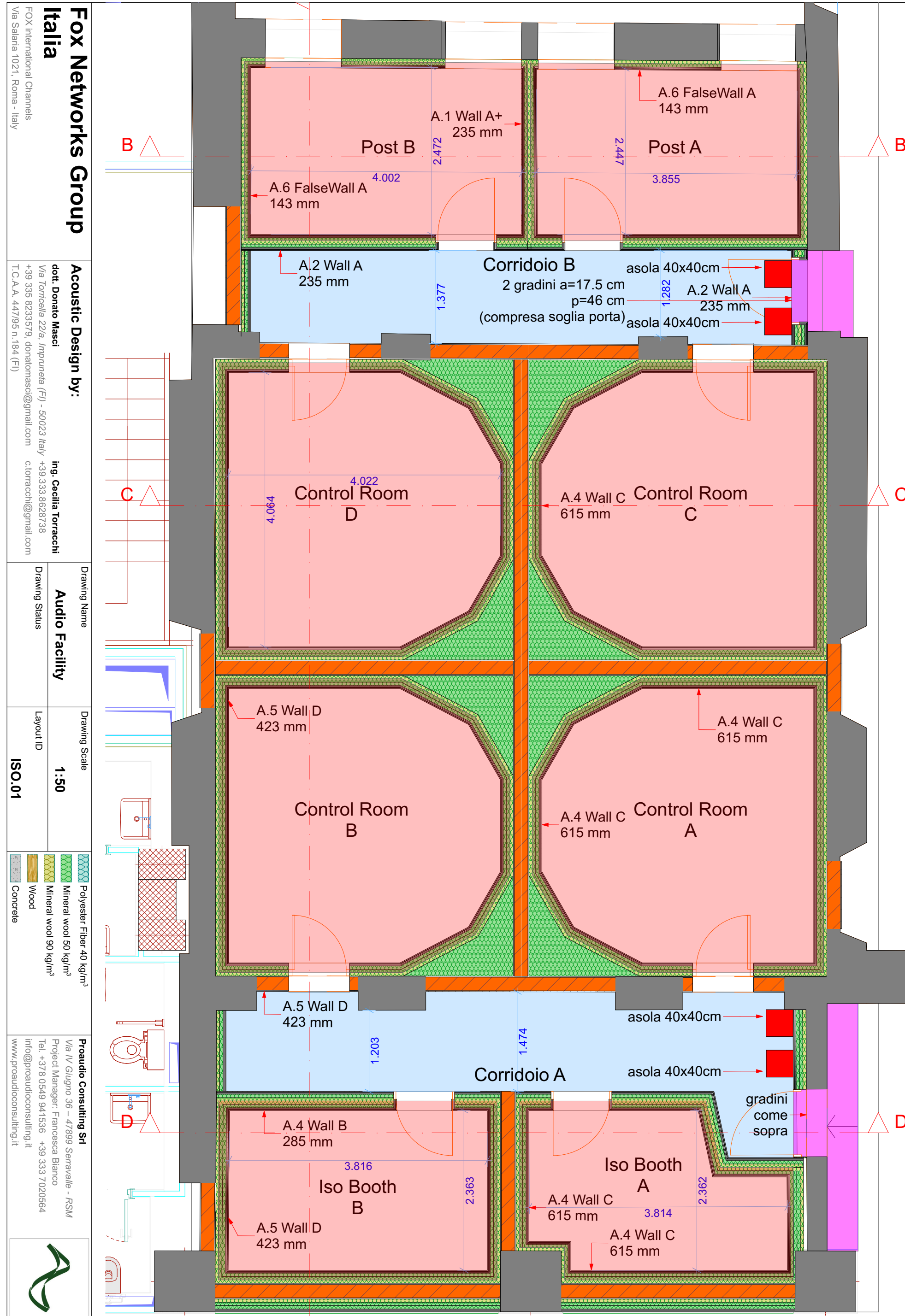
## Division of spaces

Keep the shape of the Fox room but insert it in a  
very complex context for divisions, columns etc.  
creation of two areas with independent access  
corridors (sound lock).



## Functional choices

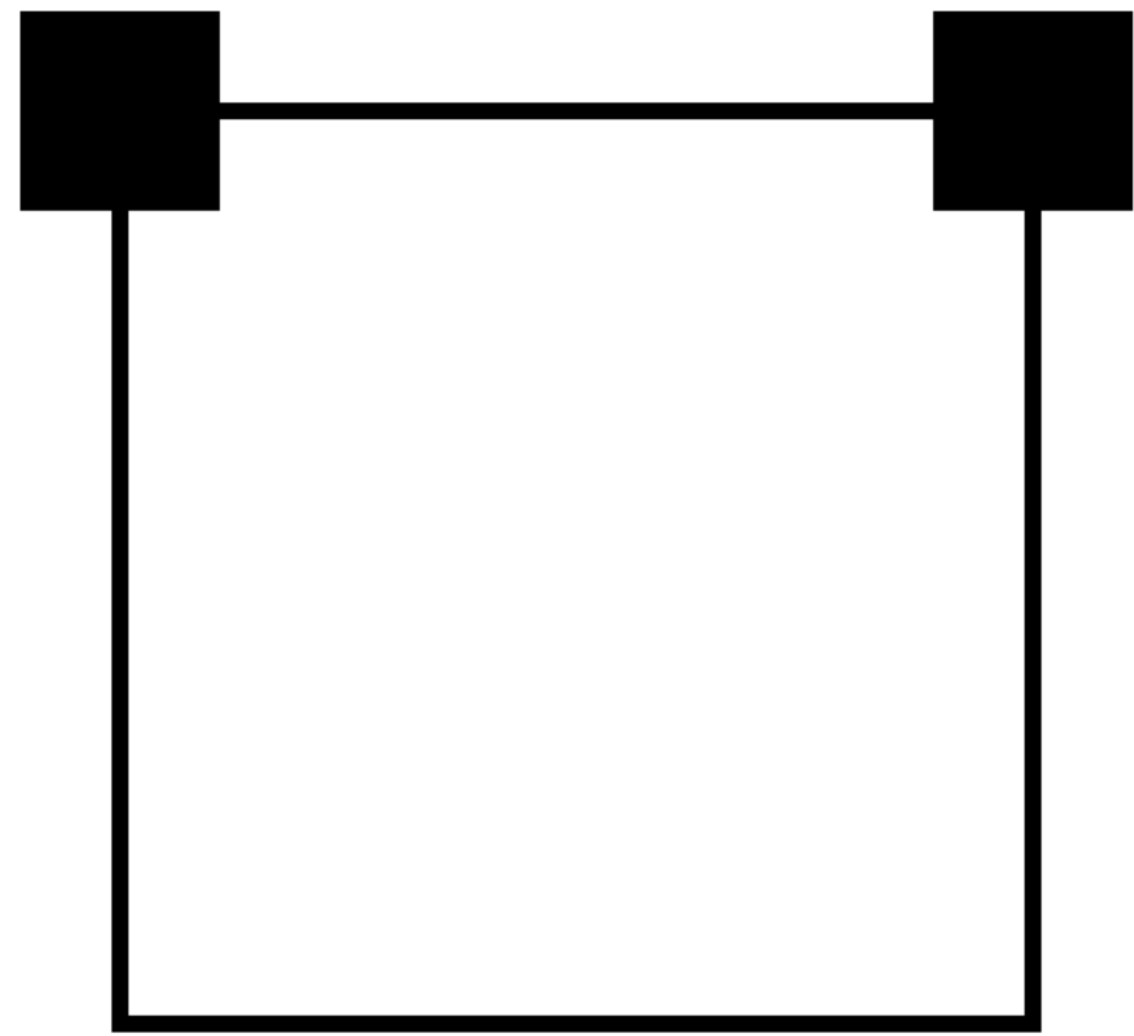
Use of a hybrid insulation system, masonry +  
plasterboard.  
Dolby Atmos listening system.



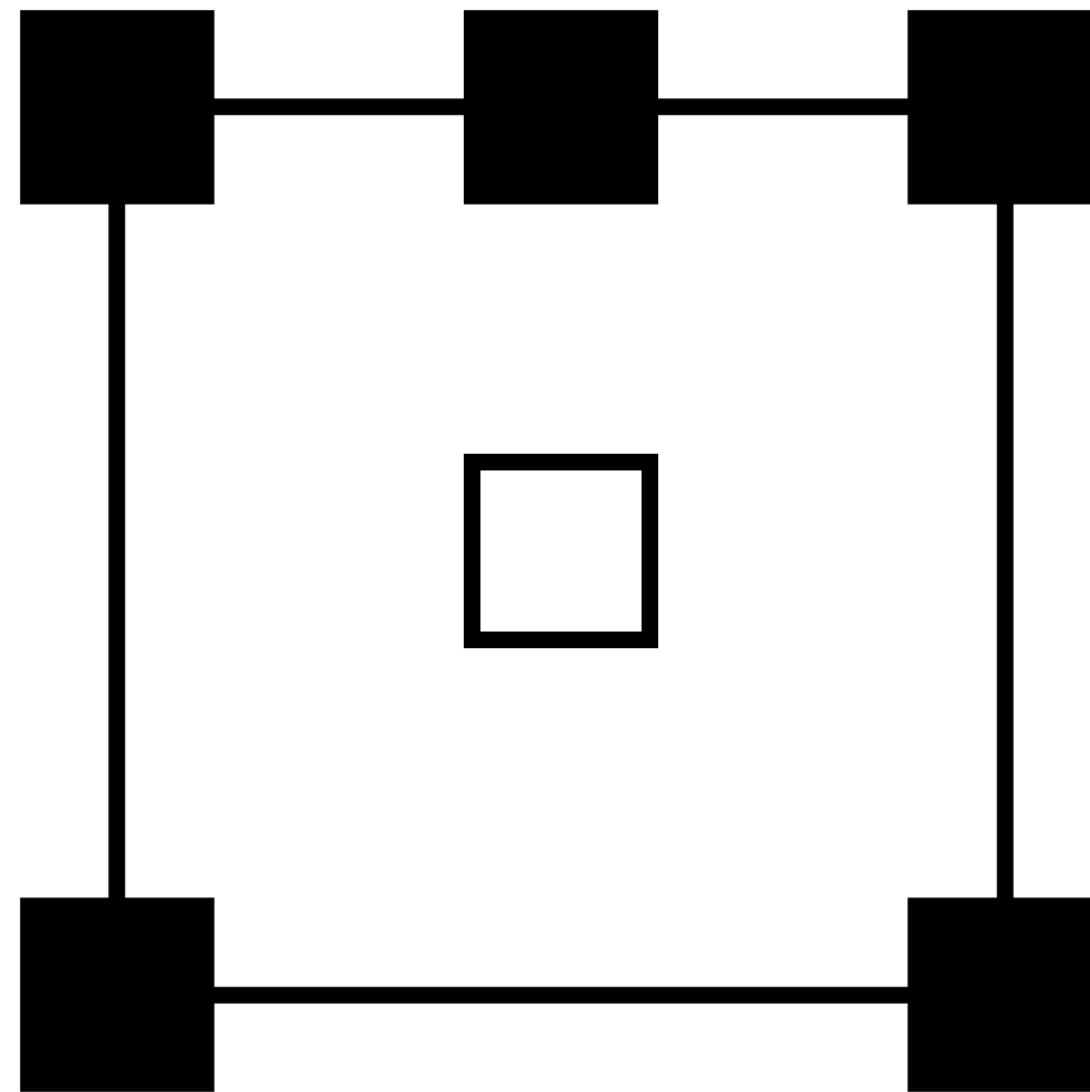


# Multifunctionality.

from stereo (2.0) to Dolby Atmos Home Entertainment (9.1.4)



Stereo



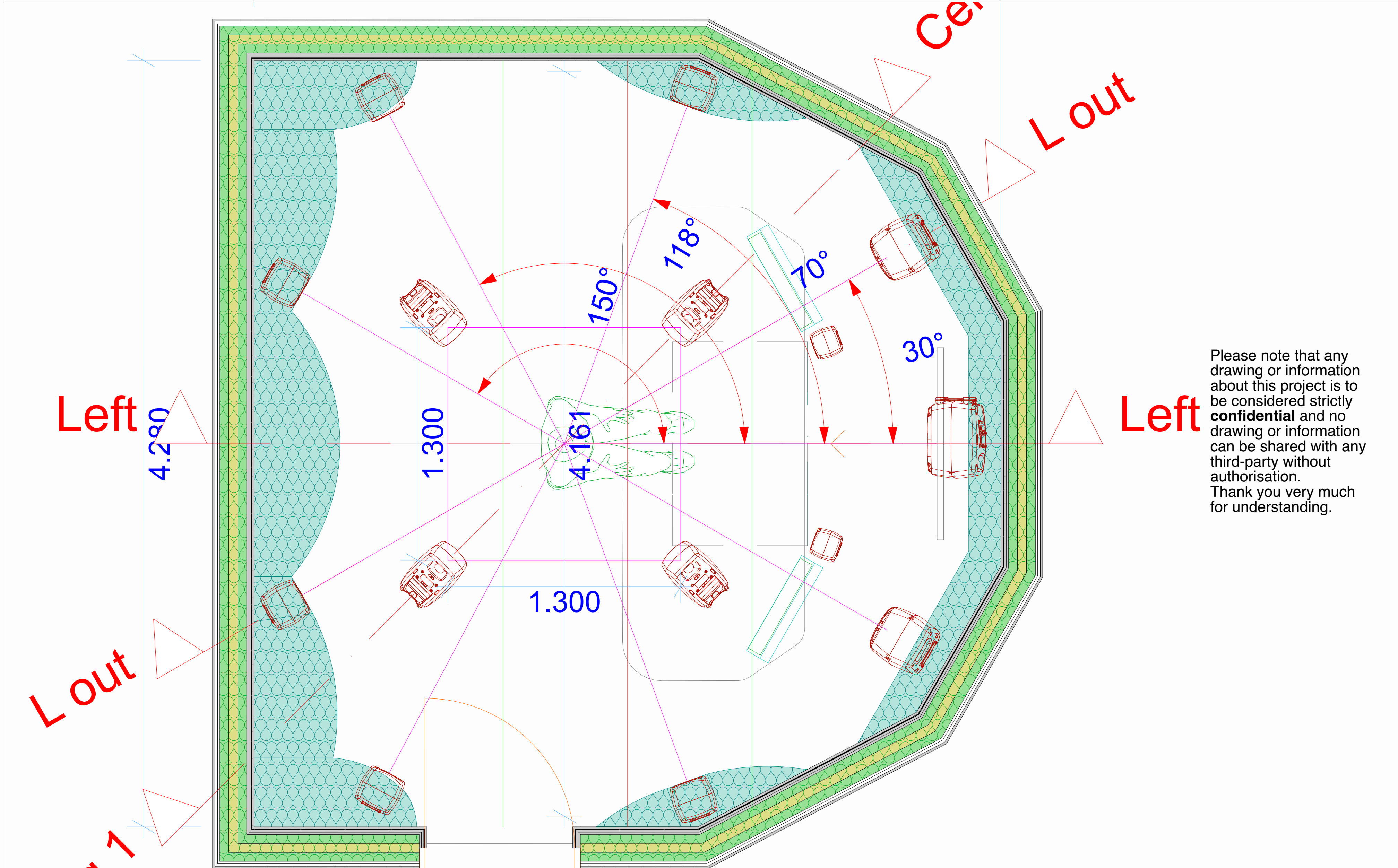
5.1 (Dolby Surround)



Dolby Atmos (9.1.4 to ...?)







Please note that any drawing or information about this project is to be considered strictly **confidential** and no drawing or information can be shared with any third-party without authorisation. Thank you very much for understanding.

# 9.1.4

2018  
Fox Networks IT

9.1.4 Dolby Atmos  
Home Entertainment

**Fox Networks Group  
Italia**

FOX international Channels  
Via Salaria 1021, Roma - Italy

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dott. Donato Masci

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T.C.A.A. 447/95 n.184 (FI)

ing. Cecilia Torracchi

+39.333.8628738

c.torracchi@gmail.com

Drawing Name

Floor

Drawing Status

Drawing Scale

1:20

Layout ID

Tav.00

Polyester Fiber 40 kg/m³

Mineral wool 50 kg/m³

Mineral wool 90 kg/m³

Wood

Concrete

Proaudio Consulting Srl

Via IV Giugno 36 – 47899 Serravalle - RSM

Project Manager: Francesca Bianco

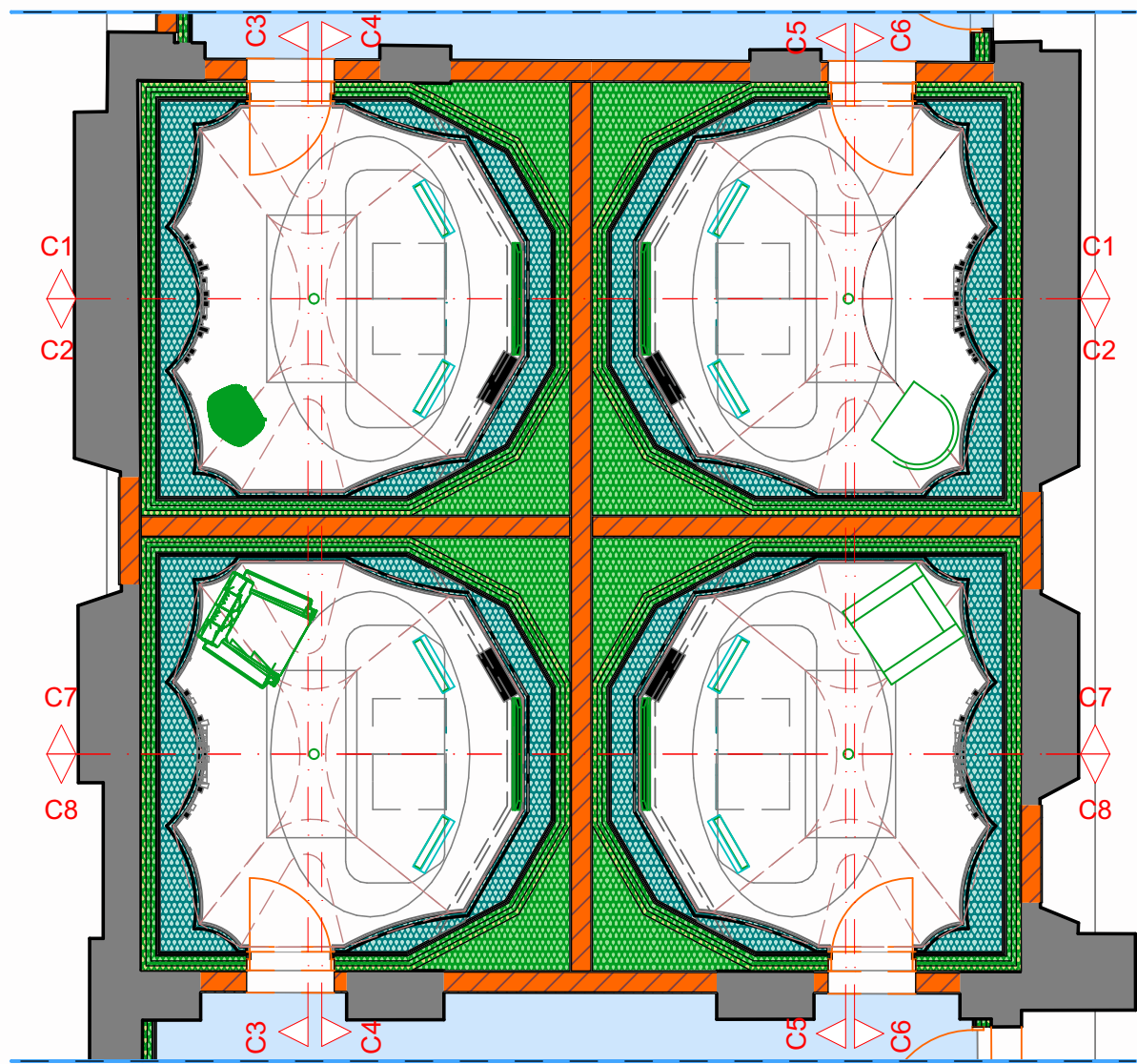
Tel. +378 0549 941536 +39 333 7020564

info@proaudioconsulting.it

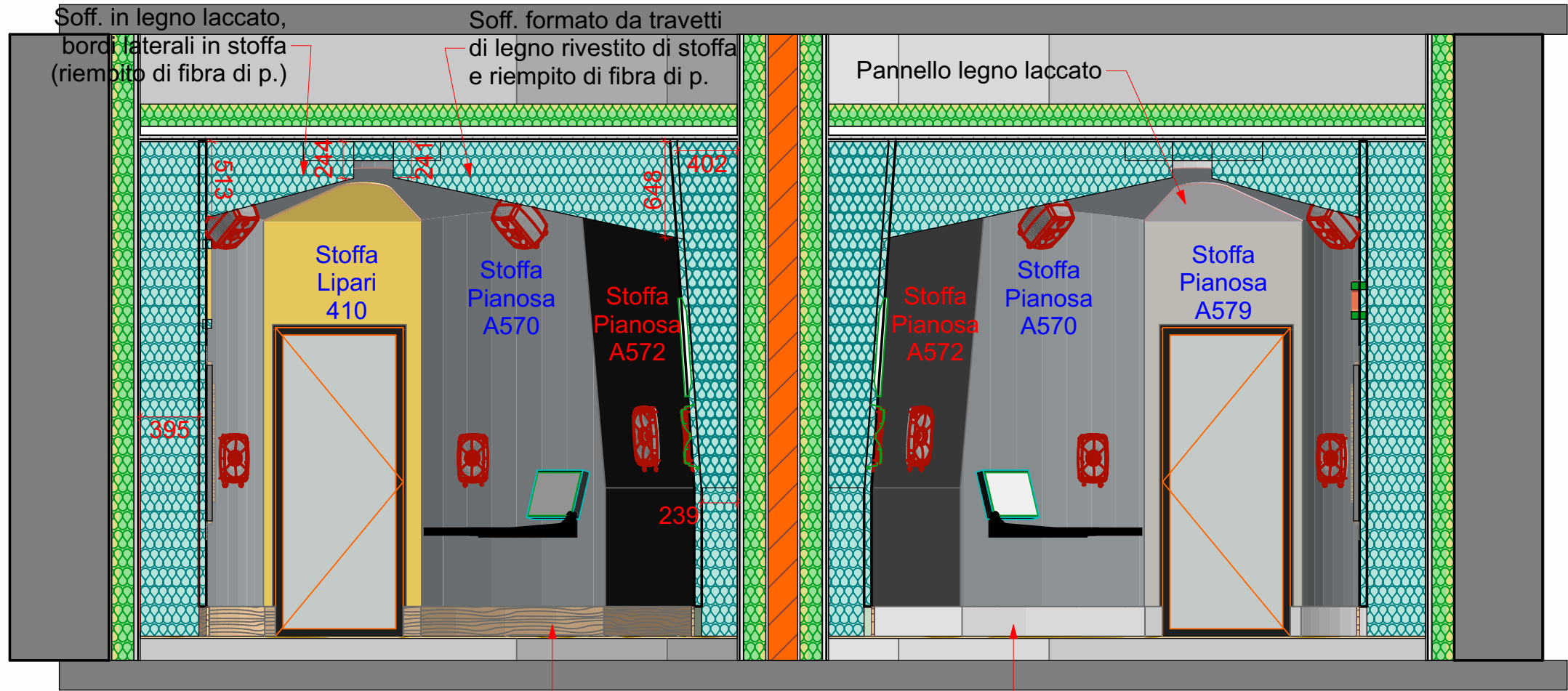
www.proaudioconsulting.it



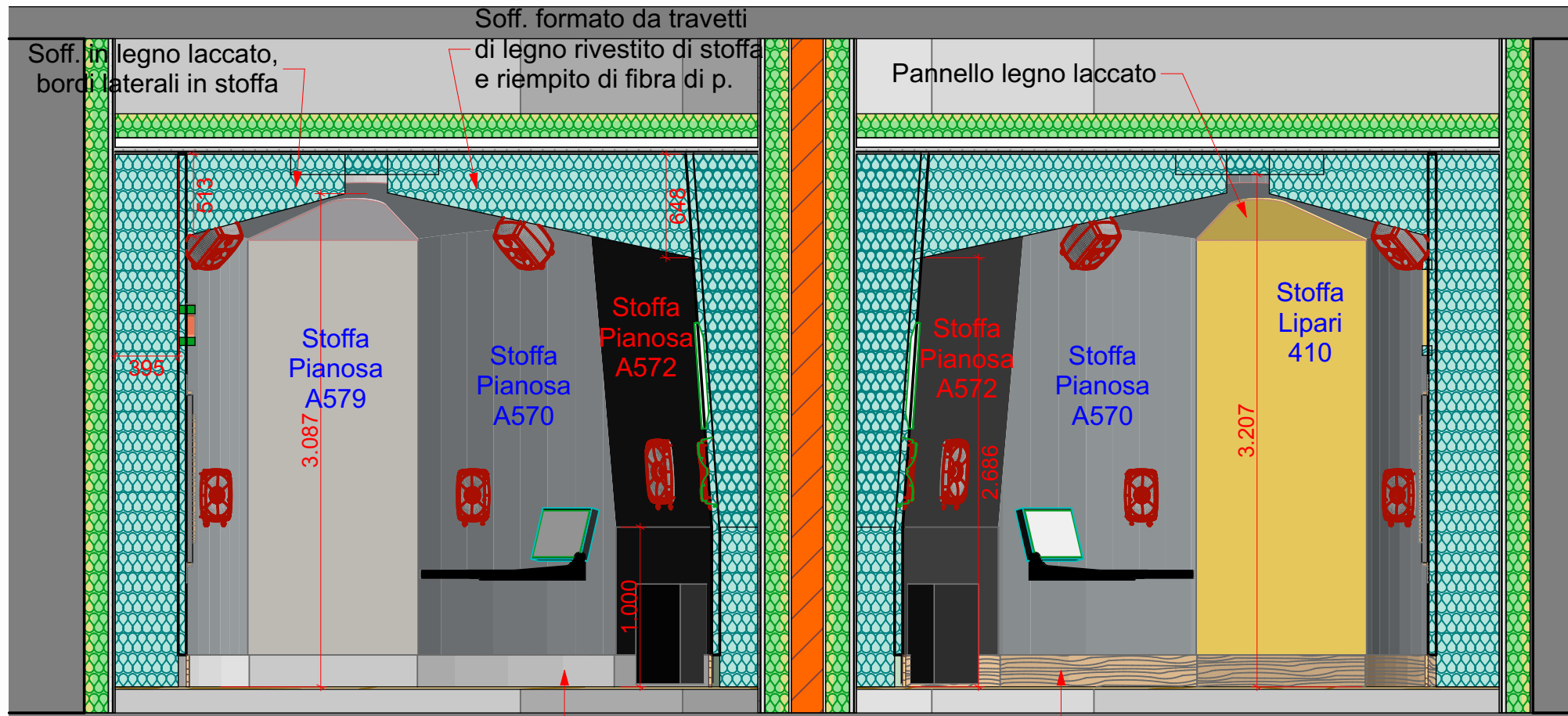




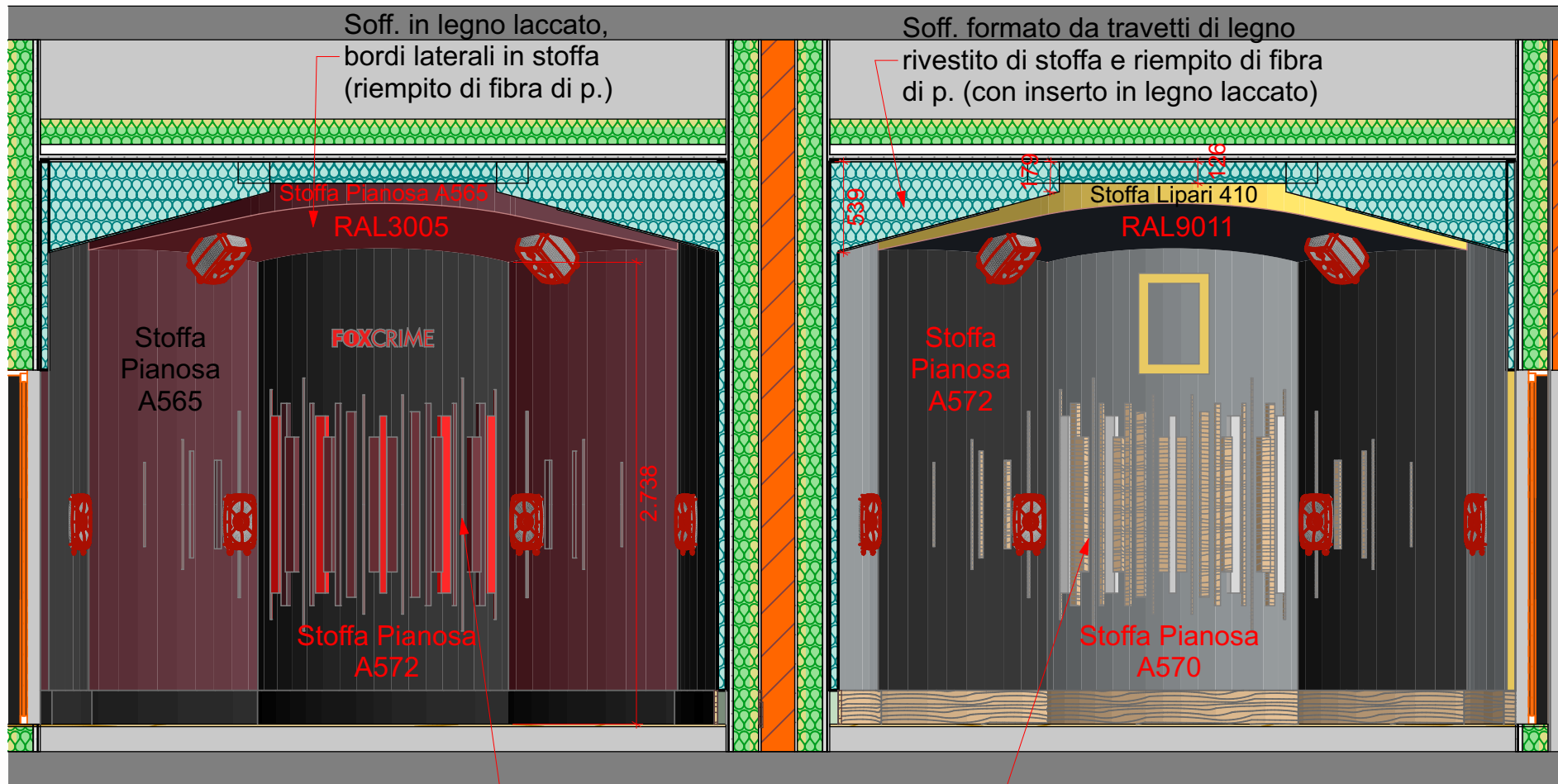
1 Control Rooms (Sezioni) 1:100



C1 Sezione 1:50



C2 Sezione 1:50



C3 Sezione 1:50

**Fox Networks Group  
Italia**

FOX international Channels  
Via Salaria 1021, Roma - Italy

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**ing. Cecilia Torracchi**

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T.C.A.A. Reg. Toscana

Drawing Name

**Control Rooms  
(Sezioni), Sezione**

Drawing Scale

**1:100, 1:50**

Layout ID

**Tr.07**

- Polyester Fiber 40 kg/m<sup>3</sup>
- Mineral wool 50 kg/m<sup>3</sup>
- Mineral wool 90 kg/m<sup>3</sup>
- Wood
- Concrete

**Proaudio Consulting Srl**

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9.1.4

2018  
Fox Networks IT

9.1.4 Dolby Atmos  
Home Entertainment







GENELEC®

# The ones

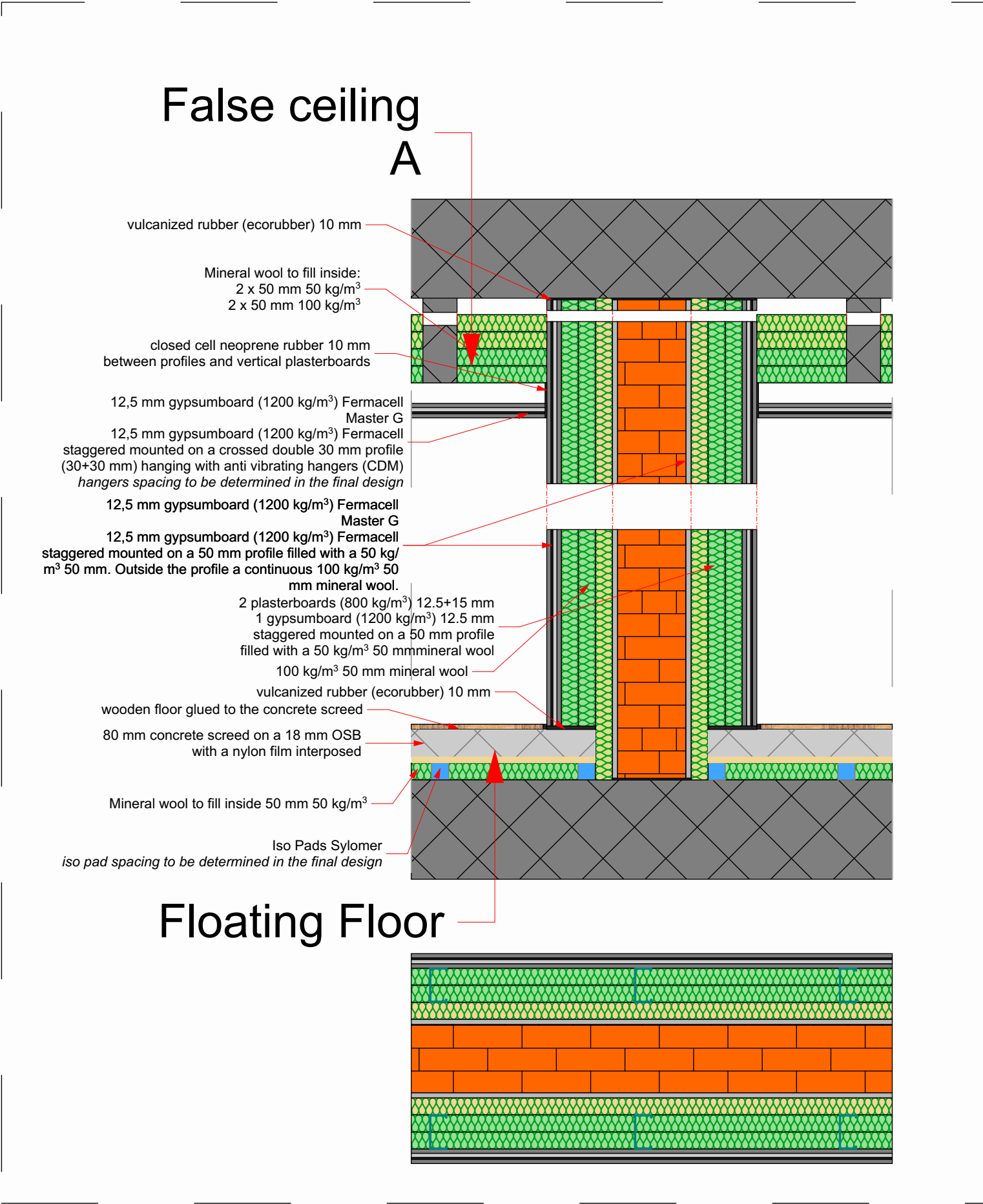
LCR 8351  
Surround 8341  
Ceiling 8341  
Subwoofer 7370

# Audio

2018  
Fox Networks IT  
Genelec Audio System







## Sound Insulation Prediction (v8.0.3)

Program copyright Marshall Day Acoustics 2014

Studio Sound Service - Key No. 2055

Margin of error is generally within  $R_w$  +/- 3 dB

Job Name:

Job No.:

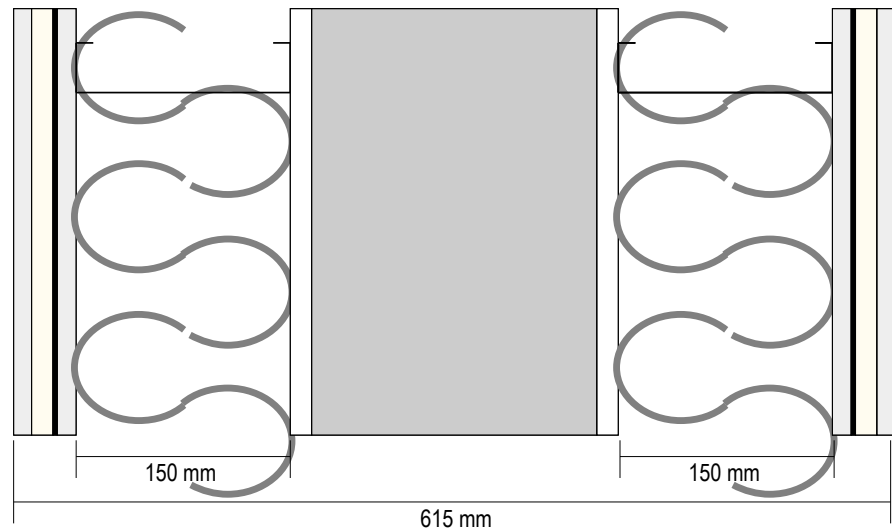
Date: 31 ott 17

File Name: 3 lastre + 3 lane + lecablocco 20 + 3 lane + 3 lastre.ixl

Page No.:

Initials:Donato Masci

Notes:



$R_w$  79 dB

$C$  -1 dB

$C_{tr}$  -3 dB

$D_{nTw}$  81 dB

[V:50m3]

[A:11m2]

### System description

Panel 1 : 1 x 12.5 mm Fermacell 12.5 (? :1150 kg/m3,E:3.8GPa,?:0.01)  
+ 1 x 2.5 mm Rubber (? :920 kg/m3,E:0.03GPa,?:0.20)

+ 1 x 15.0 mm mm Plasterboard (? :710 kg/m3,E:2GPa,?:0.01)  
+ 1 x 12.5 mm Fermacell 12.5 (? :1150 kg/m3,E:3.8GPa,?:0.01)

Cavity: Steel stud (0.55mm): Stud spacing 600 mm , Infill Rockwool (60kg/m3) Thickness 150 mm (? :60 kg/m3, Rf:24000 Pa.s/m2 )

Panel 2 + 1 x 15.0 mm Intonaco (? :1600 kg/m3,E:8GPa,?:0.01)

+ 1 x 15.0 mm Intonaco (? :1600 kg/m3,E:8GPa,?:0.01)

+ 1 x 200.0 mm Leca murblock typ 5 (? :1200 kg/m3,E:3.8GPa,?:0.04)

Cavity: Steel stud (0.55mm): Stud spacing 600 mm , Infill Rockwool (60kg/m3) Thickness 150 mm (? :60 kg/m3, Rf:24000 Pa.s/m2 )

Panel 3 + 1 x 12.5 mm Fermacell 12.5 (? :1150 kg/m3,E:3.8GPa,?:0.01)

+ 1 x 15.0 mm mm Plasterboard (? :710 kg/m3,E:2GPa,?:0.01)

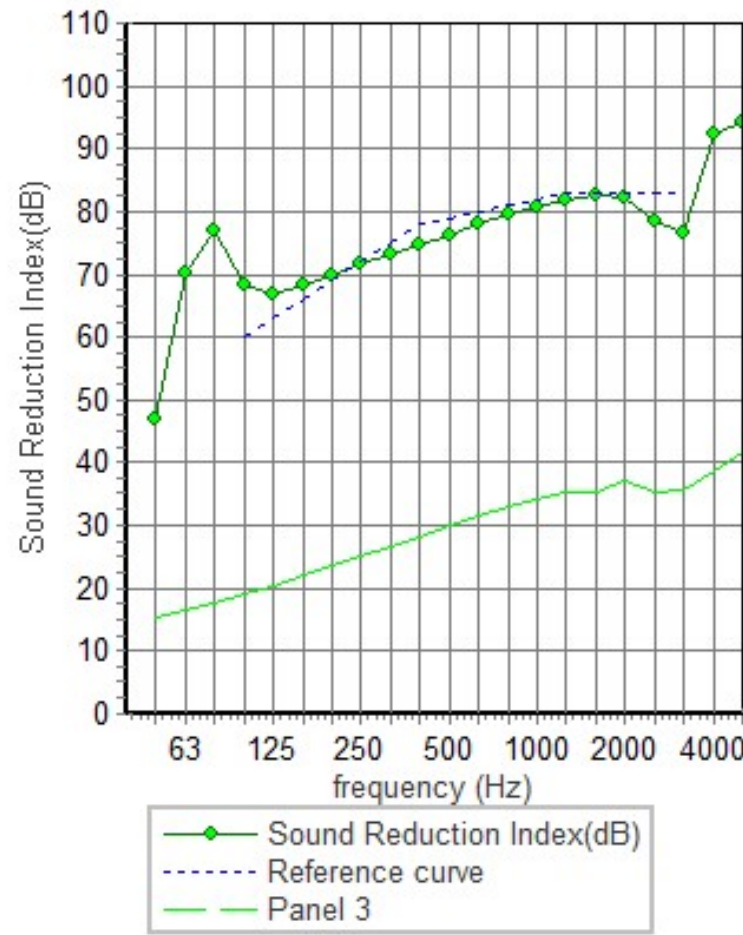
+ 1 x 2.5 mm Rubber (? :920 kg/m3,E:0.03GPa,?:0.20)

+ 1 x 12.5 mm Fermacell 12.5 (? :1150 kg/m3,E:3.8GPa,?:0.01)

Panel Size 2.7x4 m; Mass 389.4 kg/m2

Mass-air-mass resonant frequency =24 Hz , 27 Hz

frequency (Hz)	R(dB)	R(dB)
50	47	
63	70	52
80	77	
100	68	68
125	67	
160	68	
200	70	
250	72	71
315	73	
400	75	
500	76	76
630	78	
800	79	
1000	81	81
1250	82	
1600	83	
2000	82	81
2500	78	
3150	77	
4000	93	81
5000	94	



# ISO

2018  
Fox Networks IT

wall-plasterboard partition  
 $RW=79$  dB and surprisingly  
47 dB @ 50 Hz

**Fox Networks Group  
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c.torracchi@gmail.com

Drawing Name

Wall Type C, 3 lastre + 3 lane + lecablocco  
20 + 3 lane + 3 lastre

Drawing Status

Drawing Scale

**1:20, 1:1,23**

Layout ID

**A. 4**

Polyester Fiber 40 kg/m<sup>3</sup>

Mineral wool 50 kg/m<sup>3</sup>

Mineral wool 90 kg/m<sup>3</sup>

Wood

Concrete

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# Bel design italiano.

1945 - 1965: Bel Design italiano

Since 1948, as noted by François Burkhardt (2011 International Golden Compass Award):

«The intellectuals lost the battle with the elections of 1948, and with them the possibility of a change in land laws and a reorganization of the community, the architects shifted their attention to the object itself, which then became a bearer of meaning and orientation.»

It is from this year that Made in Italy begins to know its success internationally.





# Combining with the style of the facility.



Collaboration with the FOX design team for the complete integration of our ideas in the context of offices.

Moodboard  
Chromatic research, color palette  
Lighting research  
Branding  
Complements  
Finishes







Fox Core





Fox Core





Fox Core





# Fox Crime







Fox Crime





Fox Crime

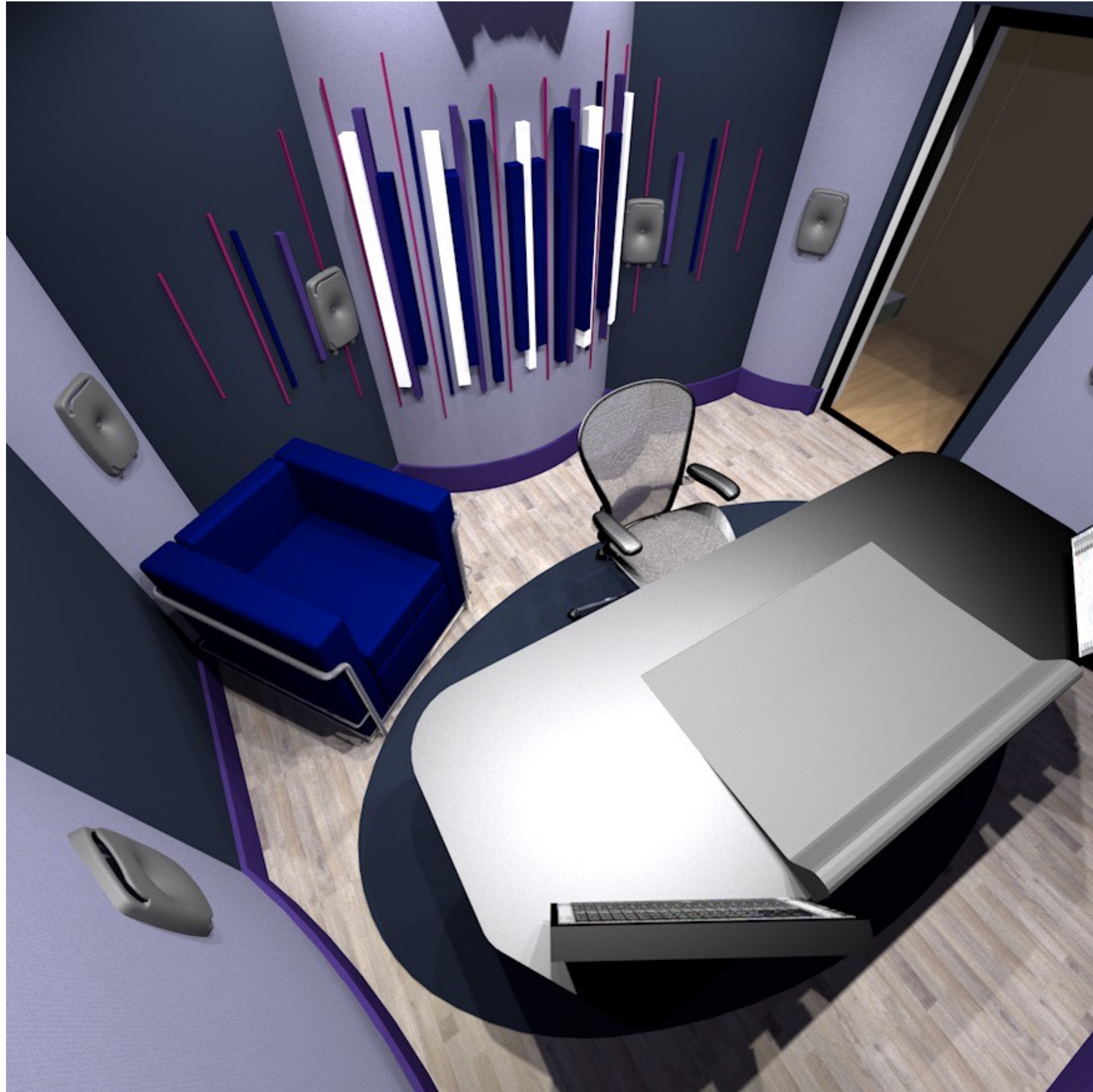




# Fox Life

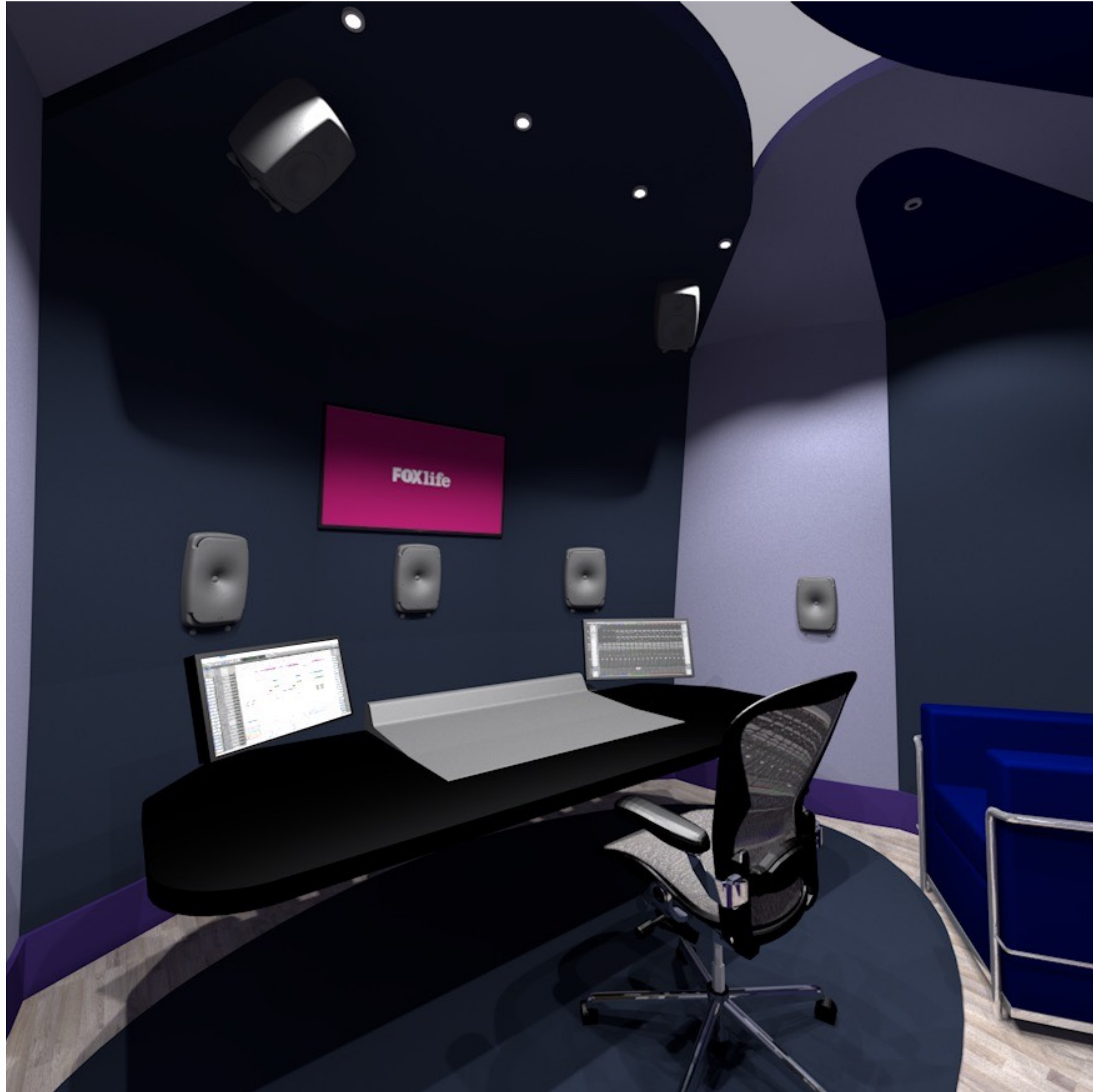






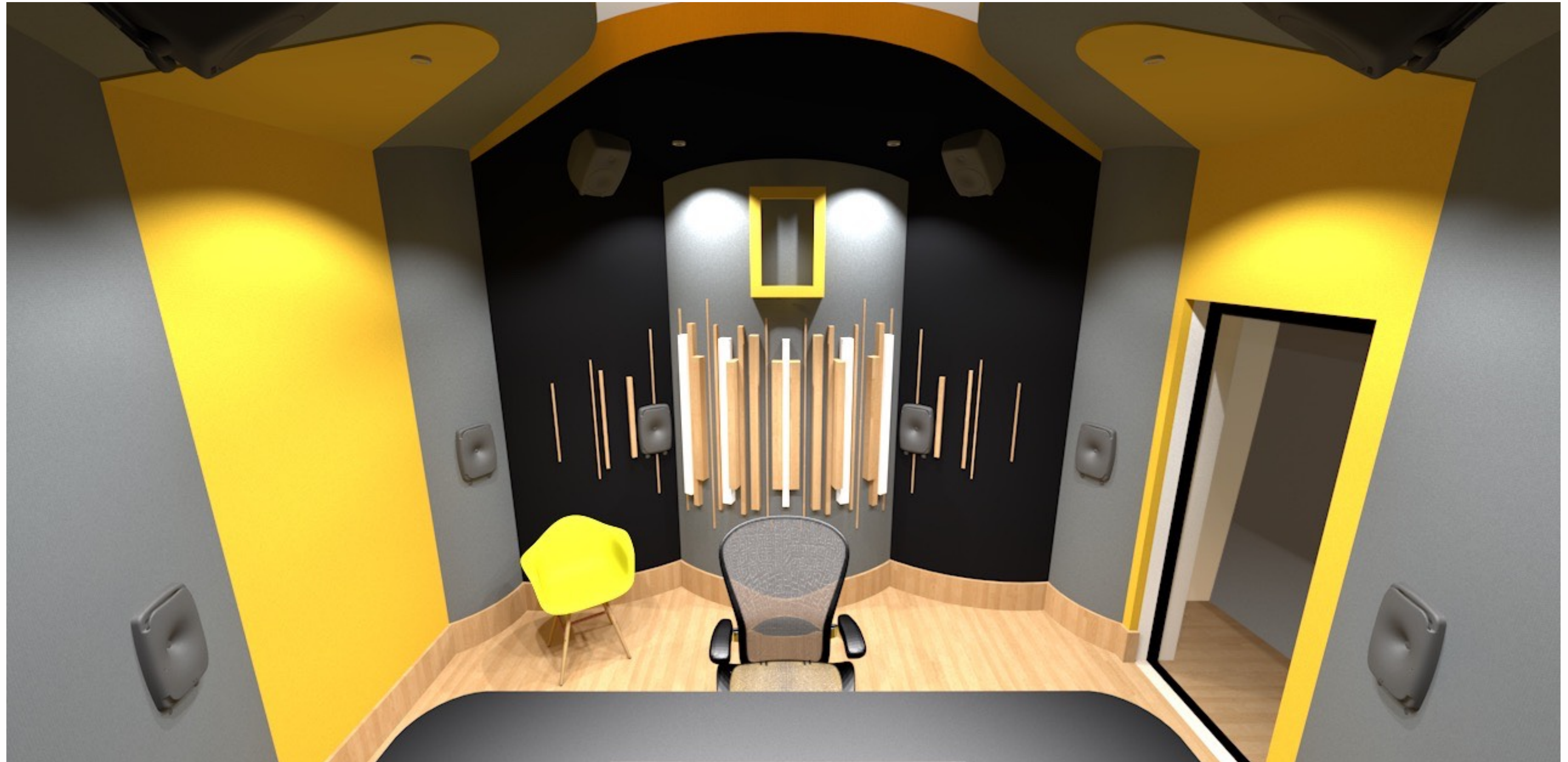
Fox Life





Fox Life

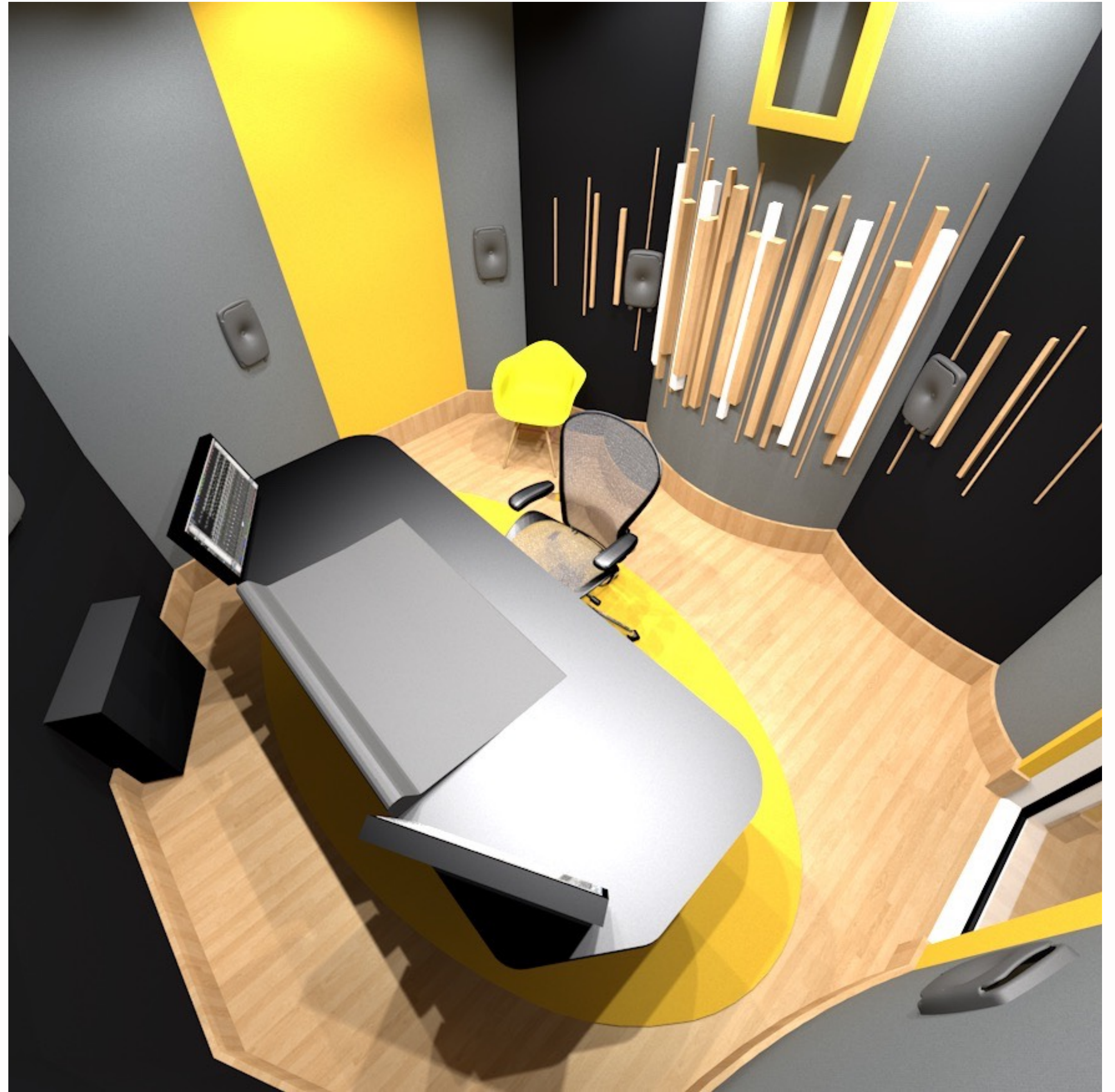




Nat Geo







Nat Geo





Nat Geo





Iso-Booth 1







Iso-Booth 1





Iso-Booth 1



# FOX Core





# FOX Core





# FOX Life





# Nat Geo





# Nat Geo





# FOX Crime





# FOX Crime





# Rec room





LampFuserSSS

FOXlife

FOX







# Thank you!

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Contacts

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- DARDT (Dolby Atmos® Room Design Tool)
- Dolby Atmos® Cinema Technical Guidelines (*White Paper*)
- Dolby Atmos® Next-Generation Audio for Cinema (*White Paper*)
- Dolby Atmos® Specification (*issue 3*)
- Dolby Atmos® Home Theater Installation Guidelines
- Dolby® CP750 Digital Cinema Processor Manual (*issue 5*)
- Dolby Atmos® Cinema Processor CP850 Manual (*issue 2*)