Speech Intelligibility for Inclusive Learning

The Importance of Audio Equity

Nevil Bounds, Business Development Manager
Biamp Europe

Introduction

- Nevil Bounds

  - Business Development Manager
  - Specializing in Higher Education
  - Joined Biamp in 2019
  - Active in the AV industry for over 45 years
  - Email: nevil.bounds@biamp.com

Introduction

- Hans Timmermans

- Field Sales Engineer
- Pre-sales support
- Joined Apart-Audio in 2010
- Acquired by Biamp in 2019
- Active in the AV industry for over 30 years
- Email:
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AVIXA CTS Renewal Units

- This presentation entitles you to 1 RU
- Applies to CTS, CTS-I, CTS-D
- Register this with AVIXA on their website – www.avixa.org in your account section

Global Reach

- Global Headquarters
  - Portland, Oregon, USA
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  - Portland, New York, Philadelphia, Boston, Brisbane, Schoten, Horsens, Modena
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  - Represented in over 120 countries globally

Connecting people through extraordinary audiovisual experiences

Product Solutions

NEW PRODUCTS

CONFERENCING SOLUTIONS

FLEXIBLE DSP

MICROPHONES

AMPLIFIERS

LOUDSPEAKERS

CONTROL SOLUTIONS

WIRELESS BYOD

AUDIENCE ENGAGEMENT

SOUND MASKING

PUBLIC ADDRESS

CABLE MANAGEMENT

Topics That We Will Cover…

- Back To The Campus – The Challenges
- Inclusivity and Audio Equity
- Sound Masking
- Good Speech Intelligibility
- Biamp's Approach to Obtaining an Extraordinary Audio Experience

Back To The Campus – The Challenges

At Home…

- Quite a reasonable experience
- Freedom from distraction – mostly!
- Often good speech intelligibility for them from your set up
- Often poor results for you from being on the far end of a call
- Can be frustrating and lead to a great deal of fatigue

Back To The Campus – The Challenges

At The Campus…

- Often highly reverberant spaces
- Little attention paid to room acoustics
- Poor speech intelligibility
- Many distractions
- Can be frustrating and lead to a great deal of fatigue

Really Bad Audio

- When the audio during a call is really bad it's easy to tell.
- It's an obvious issue.
- Everyone in the meeting will know.
- It leads to meetings becoming a waste of time and unproductive.
- It's normally easy to identify the cause.

“Just” Poor Audio

- If the audio quality in a call is “just” poor it’s not always blatantly obvious
- Even low levels of background noise, distortion or echo will impact the listeners
- People become distracted, stressed and less productive
- Causes are often complex to identify and rectify

Inclusivity and Audio Equity

- Everyone must be able to have the same audio experience
- Rooms must be equipped to facilitate this
- Improve acoustics
- Spaces that are fit for purpose
- Individuals must not be at a disadvantage
- Assistive Listening Systems

Assistive Listening Systems

PARLÉ VBC 2500a Video Bar

- Support for assisted listening systems
  - Adds a 3.5mm output connector
  - Mono balanced line level

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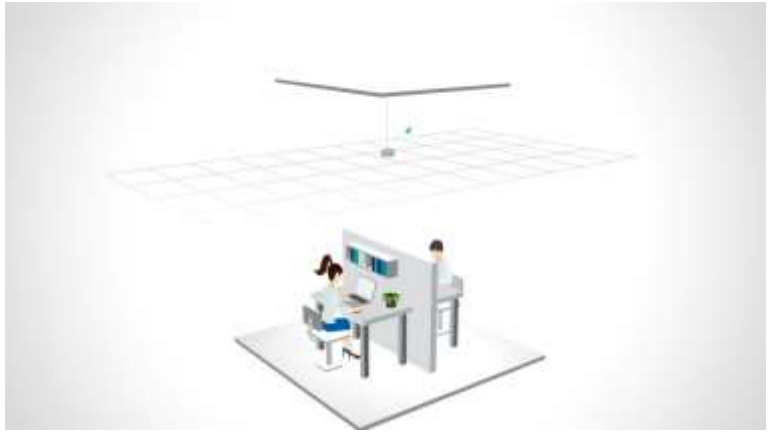
Sound Masking – What is it?

Sound Masking is the addition of a specifically tuned ambient background sound that targets the same frequency range as human speech and is effective when placed at the unintentional listener location to help lower the level of speech intelligibility.



Sound Masking – Why?

PROTECTS SPEECH PRIVACY

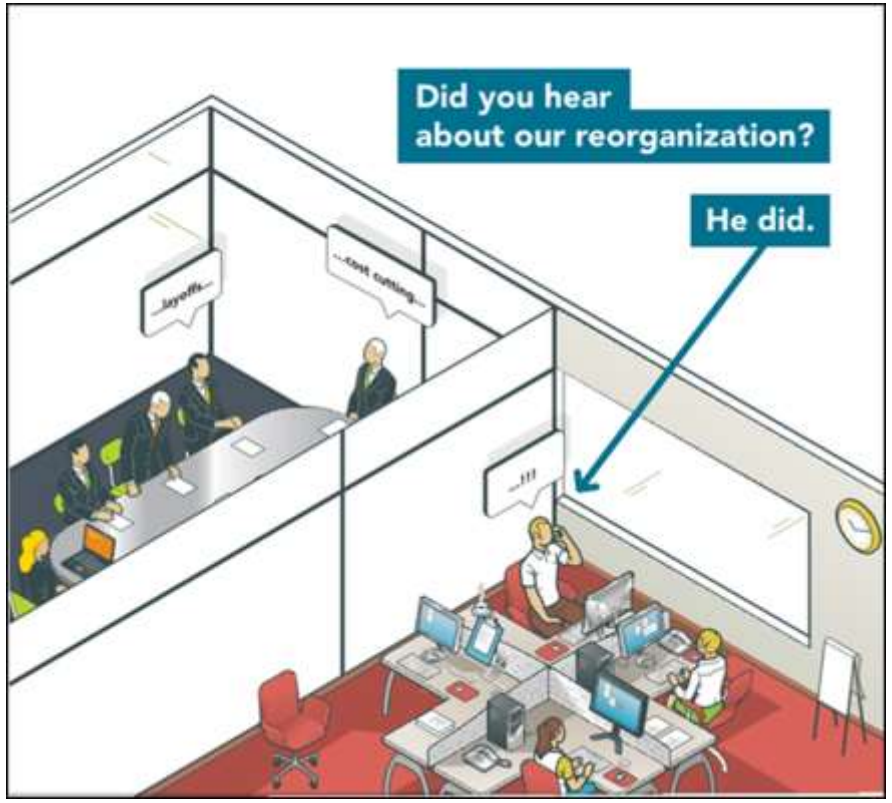
REDUCES NOISE DISTRACTIONS

INCREASES WORKPLACE COMFORT

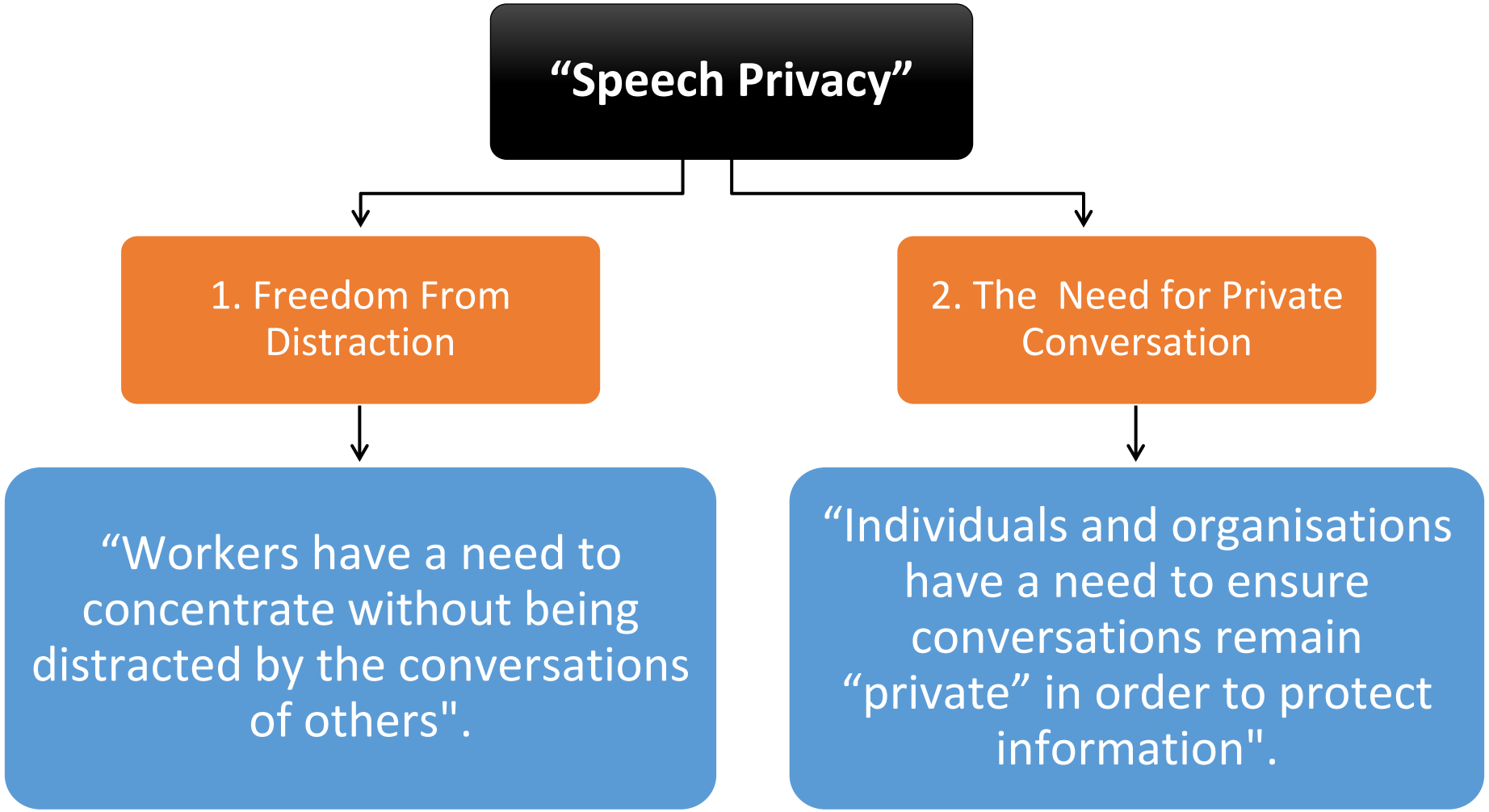
Sound Masking – What is Speech Privacy

Speech Privacy…

"The inability of an unintentional listener to understand another person's conversation".



Sound Masking – Speech Privacy Summary



Sound Masking Systems

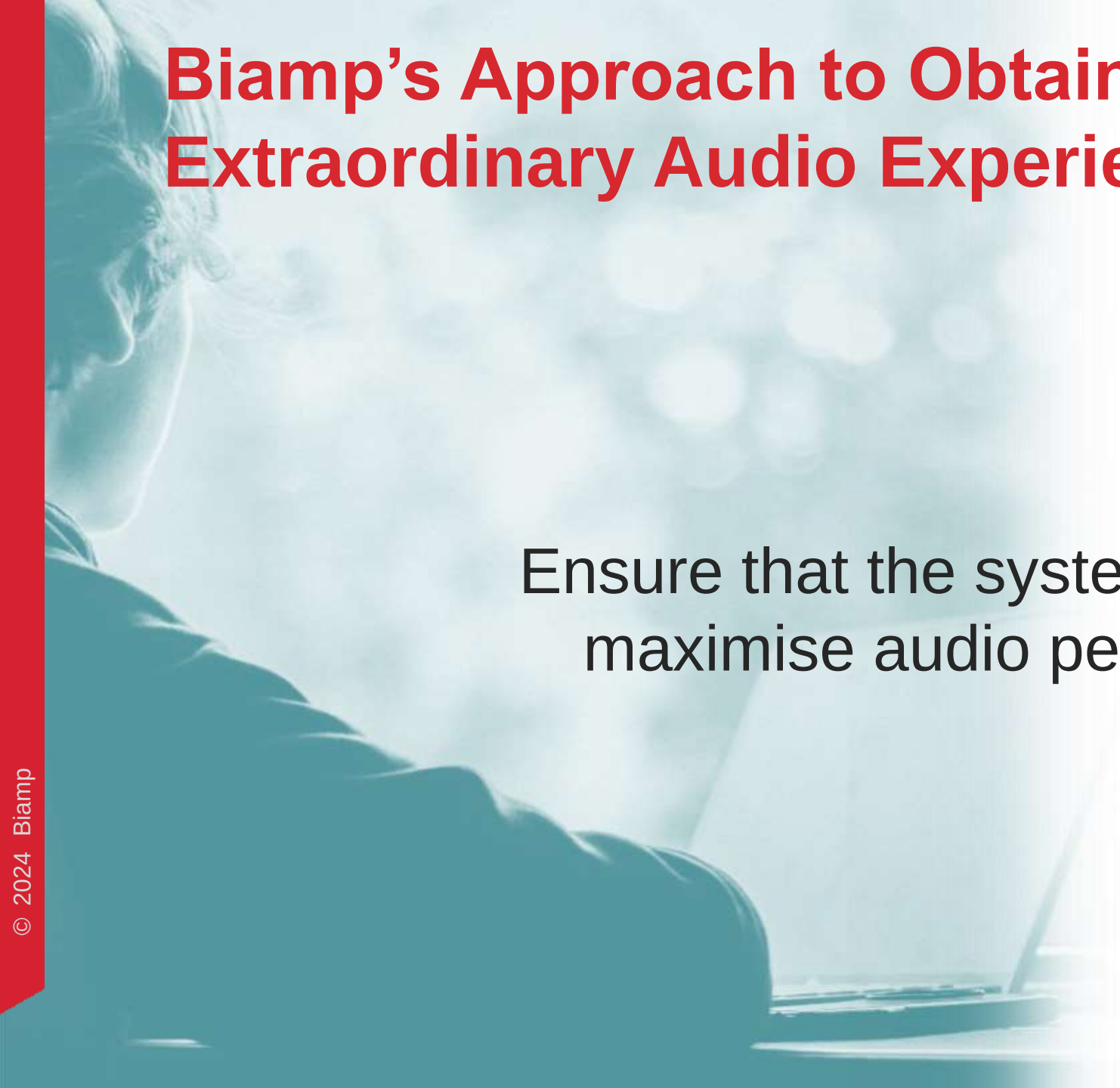
Good Speech Intelligibility

- Why is this so difficult to achieve?
- Poor microphone technique
- Poor acoustics
- Badly set up systems
- Poorly delivered content
- Not allowing adequate understanding for international delegates

Poor Speech Intelligibility

Poor Speech Intelligibility

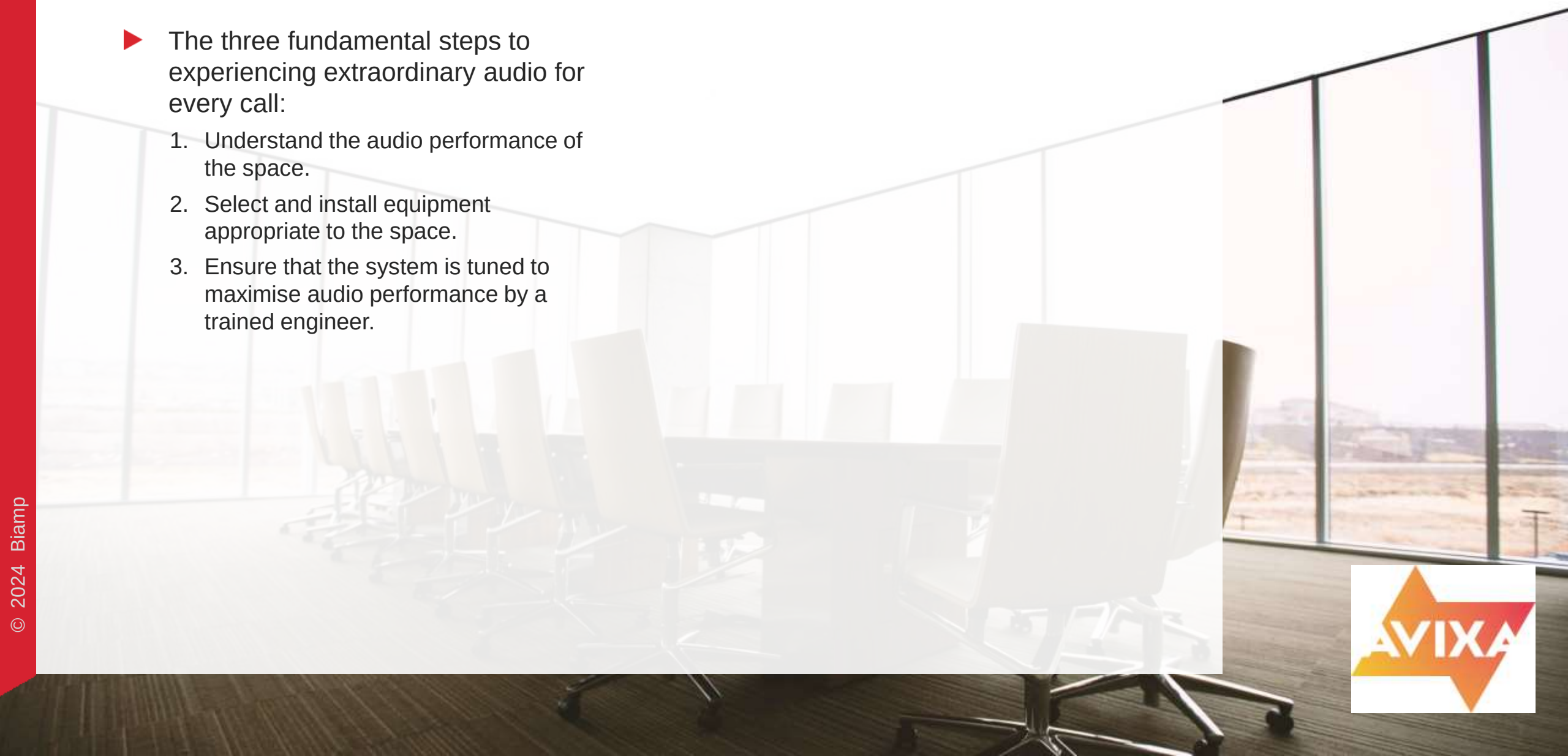
Biamp's Approach to Obtaining an Extraordinary Audio Experience



Ensure that the system is tuned to maximise audio performance.

Achieving Extraordinary Audio

- The three fundamental steps to experiencing extraordinary audio for every call:
  1. Understand the audio performance of the space.
  2. Select and install equipment appropriate to the space.
  3. Ensure that the system is tuned to maximise audio performance by a trained engineer.



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- Understanding the way the room sounds is vital.
- Data must be gathered:
  - Measure actual / define background noise.
  - Measure actual / define reverberation.
  - Measure / define room size and target coverage.
- *Some spaces will never work for conferencing! Technology cannot always fix bad room acoustics.*

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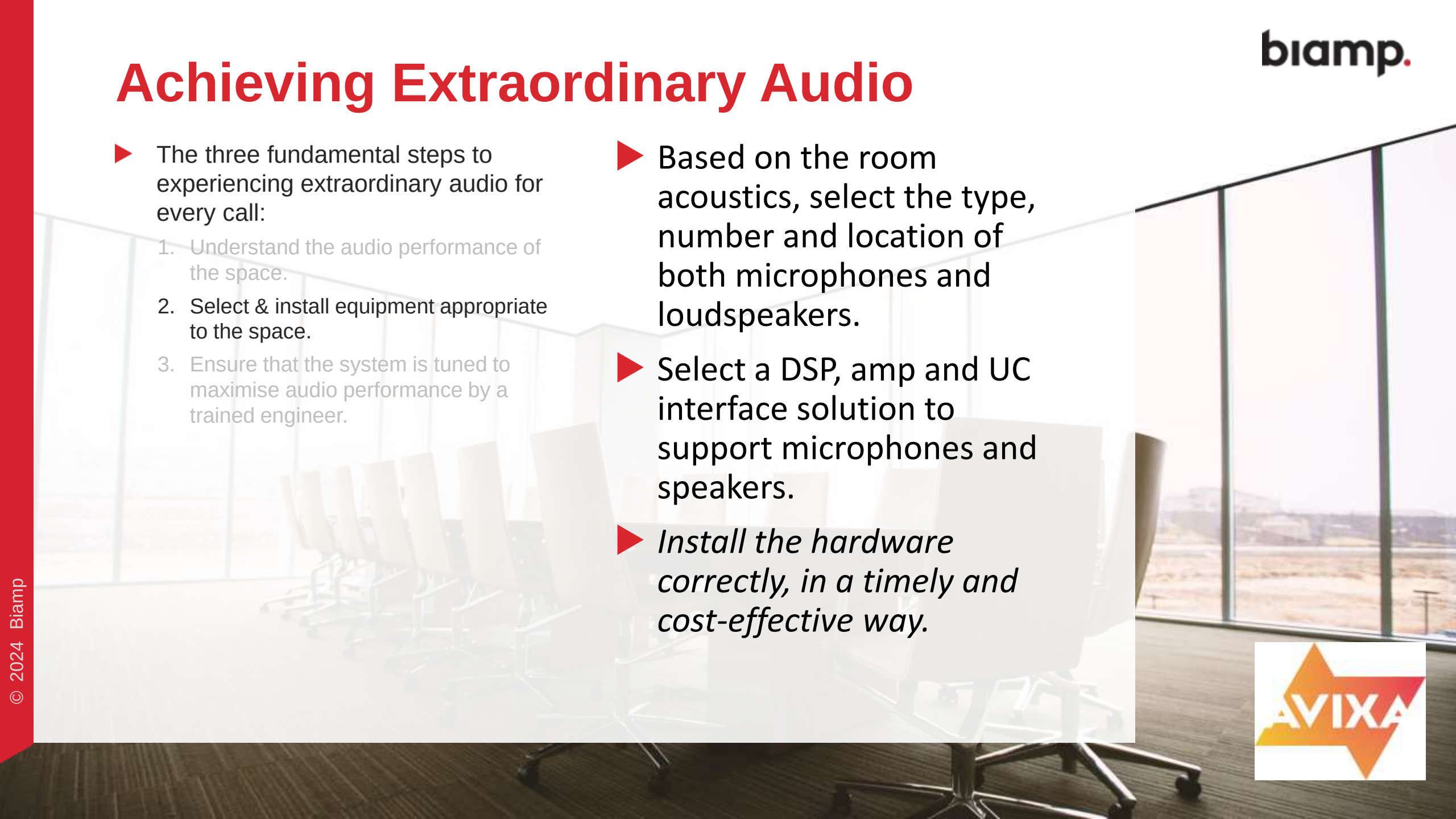
- Based on the room acoustics, select the type, number and location of both microphones and loudspeakers.
- Select a DSP, amp and UC interface solution to support microphones and speakers.
- *Install the hardware correctly, in a timely and cost-effective way.*



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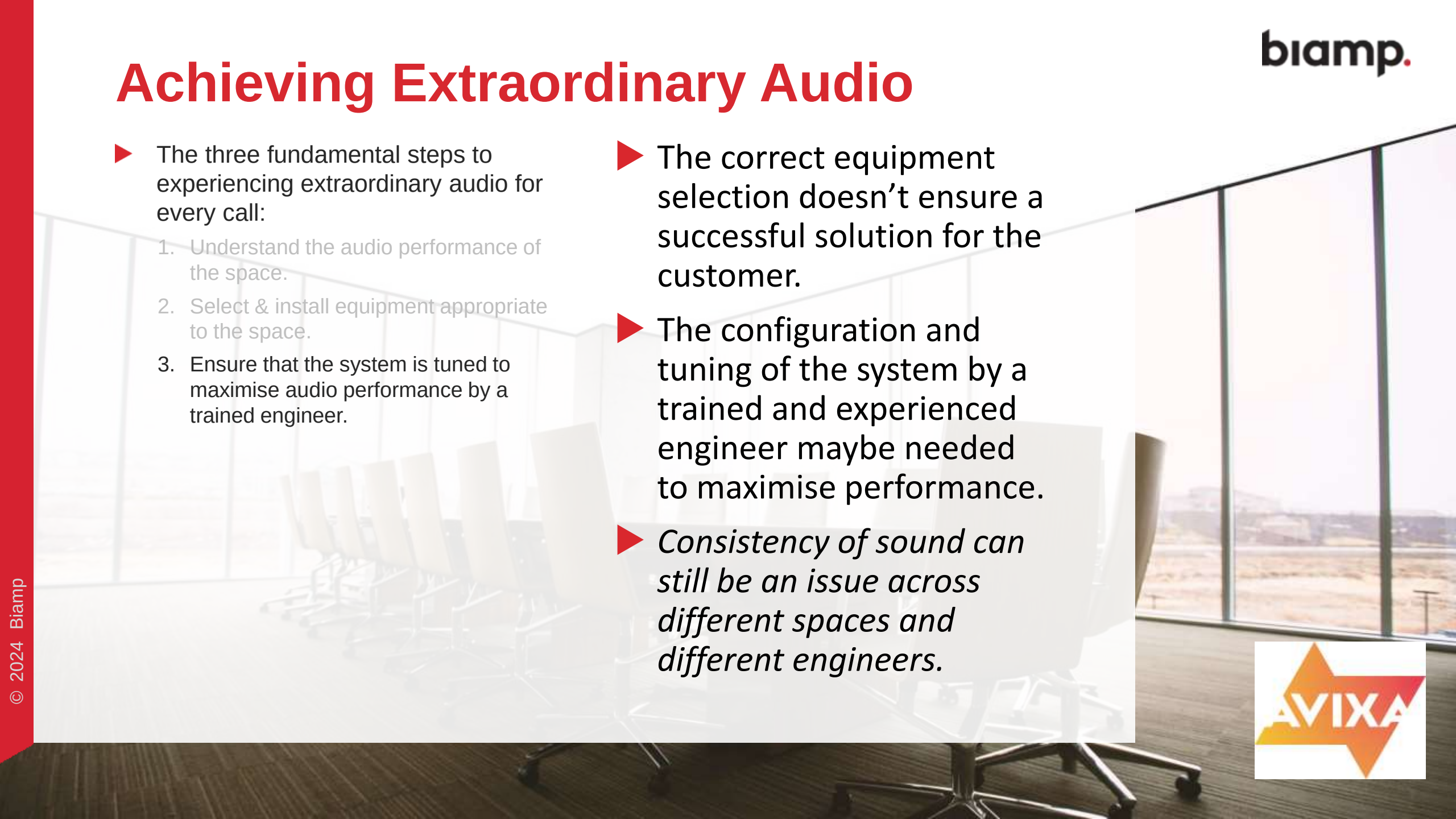
- The correct equipment selection doesn't ensure a successful solution for the customer.
- The configuration and tuning of the system by a trained and experienced engineer maybe needed to maximise performance.
- *Consistency of sound can still be an issue across different spaces and different engineers.*



Achieving Extraordinary Audio

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  1. Understand the audio performance of the space.
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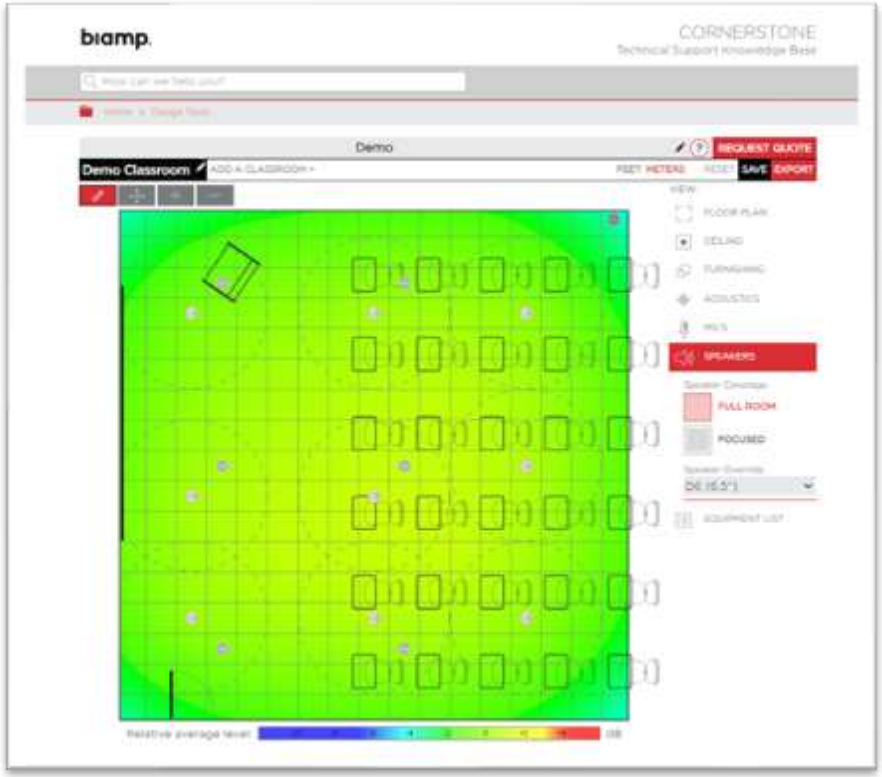
- Achievable every time?

- Absolutely! If you deploy Biamp's conferencing solutio
- Biam tools, pr cts and technologies sim the fundamental st
  - Mitigating ris
  - Minimising plexity.
  - Minimising onsite time.
  - Maximising ibility.
  - Maintainin nsistency.
  - Maximising user satisfaction.

Classroom Designer

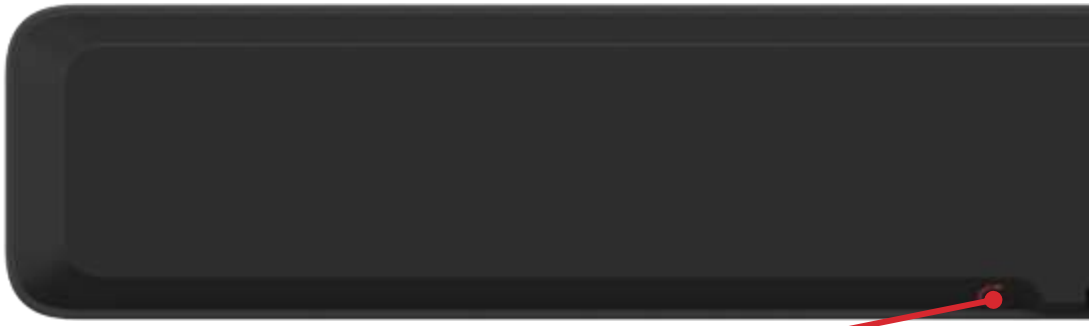
- The single design tool
  - Uses the room's dimensions
  - Uses the room's acoustic data
  - Delivers microphone design validation
  - Delivers loudspeaker design validation
  - Highly customisable
  - Microphone performance demo capabilities
  - Fully adaptive equipment list generation
  - Delivers customer facing documentation
- Insures a successful outcome



support.biamp.com → Design Tools

Biamp LAUNCH

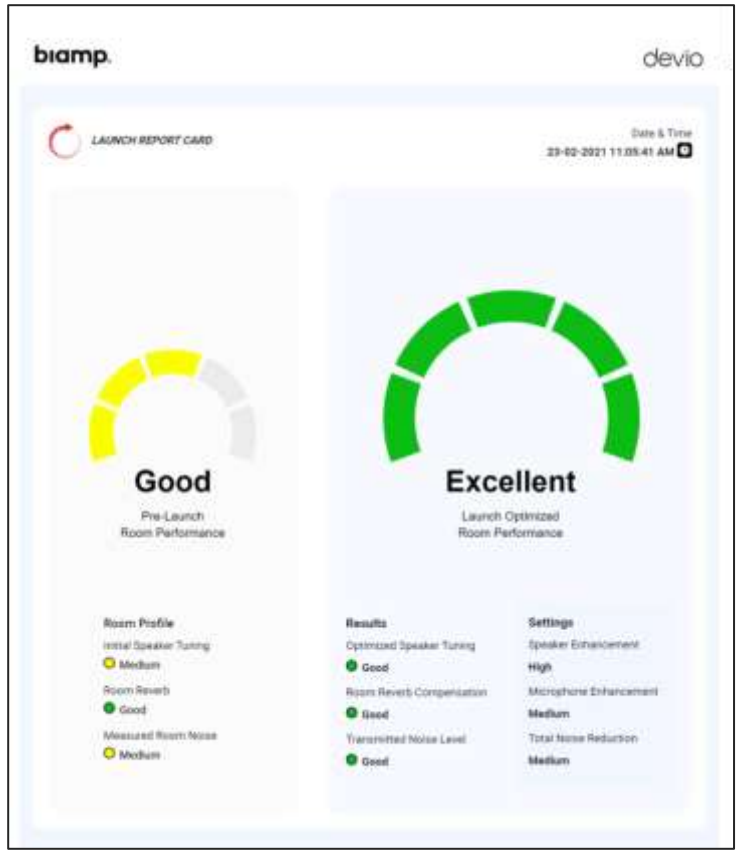
- What is Biamp LAUNCH?
- A single button press to get started
  - Launch discovers and programs connected devices
  - Measures the acoustics of the room
  - Compares measurements with target values
  - Tunes the system to optimal performance
  - Generates a performance report



LAUNCH Button

Biamp LAUNCH

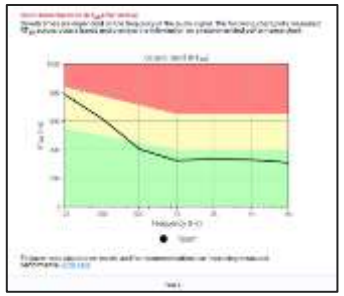
- Biamp LAUNCH
- Report card
  - An overview of key information for commissioning and ongoing support



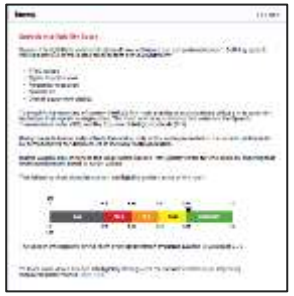
LAUNCH

Biamp LAUNCH

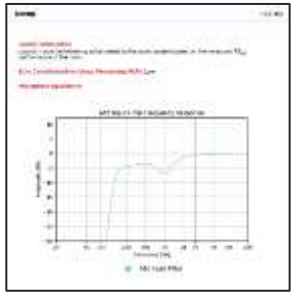
- Biamp LAUNCH
- Advanced reporting
  - 8 pages of detailed information



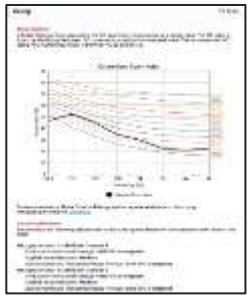
Room Reverberation by Octave



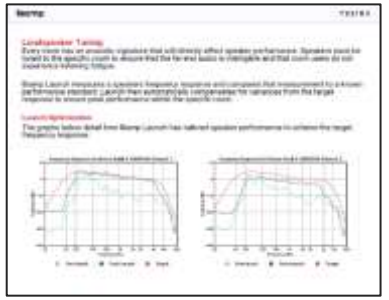
Speech Intelligibility



Microphone Equalization

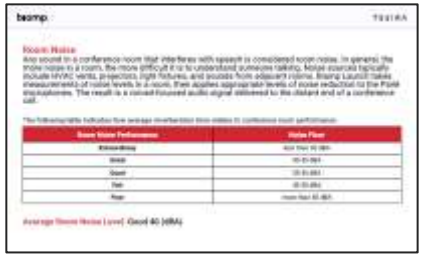


Noise Criterion Scale

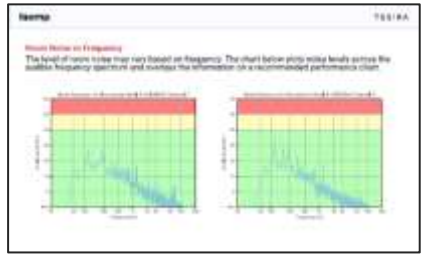


Loudspeaker Tuning

Room Reverberation



Room Noise Level



Room Noise vs Frequency

LAUNCH


bamp

Summary

- Inclusivity and lack of audio equity is no longer optional
- Greater attention must be paid to room acoustics
- Obtain input from those who have hearing difficulties
- Improve training for those who are presenting
- ‘It costs about the same amount of money to design a system correctly as it does to design one badly’

  (Ted Scott, Sound Supervisor – ATV Studios UK, 1978)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Questions?
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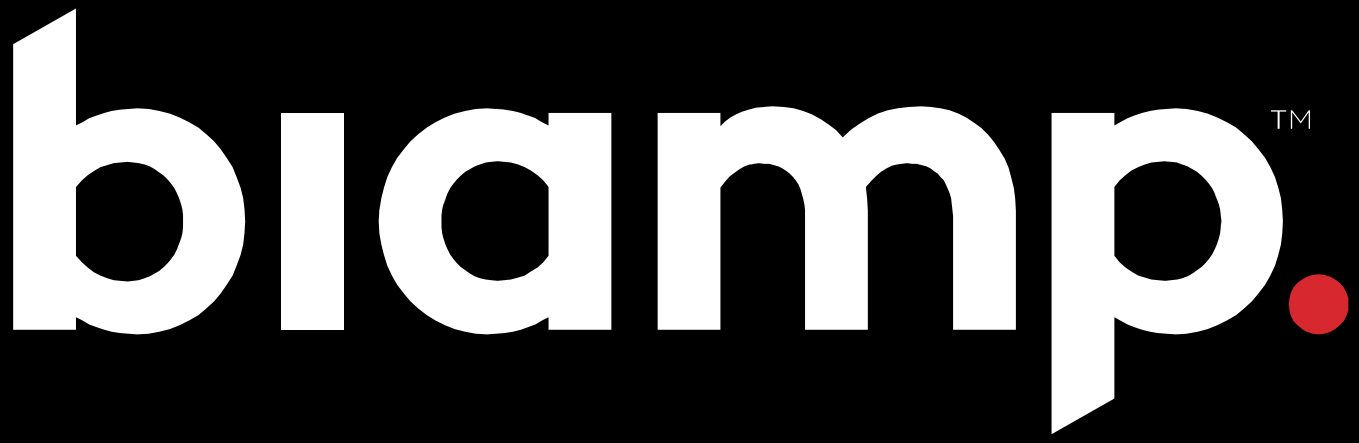
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