



SONIC DESIGN STUDIOS
ARCHITECTURAL SOUND DESIGN

A GUIDE FOR ARCHITECT'S AND INTERIOR DESIGNERS

The Architect's Guide To Specifying Audio Systems

Sound, designed as architecture. How to resolve the room and the system together, from the first drawing.

A manifesto for sound as a spatial component

Sound is not an accessory to architecture. It carries weight, occupies volume and shapes how a room is perceived before anyone speaks. Yet audio is still usually the last discipline at the table, specified after the ceiling is closed and the finishes are fixed.

We work the other way round. Sound is resolved from the first drawing, alongside lighting, materials and spatial planning, so the room and the system are designed together.

That does not mean every loudspeaker should disappear. Where the scheme carries a statement, we specify sculptural loudspeakers as deliberate objects, given the same care as a lighting scheme, a joinery detail or a commissioned artwork. Where it does not, the system is integrated so precisely that it reads as part of the architecture. The design intent makes that choice, never the equipment list.

*The result is an acoustic identity.
Sound that is felt before it is
noticed. A room that speaks before
anyone in it does.*

O2

THE DESIGN OPPORTUNITY

The goal is not a quiet room. It is the right one.

Well integrated audio gives architects and interior designers a further instrument. It shapes mood, reinforces the narrative of a space, and separates the exceptional room from the merely competent one.

Engaged from the earliest stages, it lets the design team:

-
- 01 Create an atmosphere guests remember, with energy and conversation in balance rather than in competition.
 - 02 Carry the brand experience through every zone and transition, from arrival to late night.
 - 03 Give non-technical staff a system they can run with confidence, every service.
 - 04 Make the premium quality of the space legible in every sense, with material continuity between what guests see and what they hear.
-
-
-
-

A room does not need to be silent to be comfortable. It needs enough control for energy, music and conversation to coexist, and that balance is set by the character the venue wants, not by a single target.

03

WHAT THE EVIDENCE SAYS

The finishes shape the acoustic outcome, and the acoustic outcome shapes how the room is judged.

FIGURE	FINDING	SOURCE
24%	Noise was the most common restaurant irritation in a survey of nearly 13,000 US diners, ahead of poor service, high prices and parking.	Zagat Dining Trends Survey, 2018
12 restaurants	Across 142 diners, the measured sound level in the room was a significant predictor of how they rated the restaurant overall.	Steffens, Wilczek and Weinzierl, Frontiers in Built Environment, 2021
Glass and stone	Street-facing glazing and hard, reflective floors and tabletops, chosen for visibility and a clean look, lengthen reverberation and push guests to raise their voices.	Lindborg, Applied Acoustics, 2015 (cited in Steffens et al., 2021)
825 diners	Across 11 restaurants, reverberation time predicted how diners rated privacy, comfort, quietude and ease of conversation.	Battaglia, Acoustical Society of America, 2014 (cited in Steffens et al., 2021)
0.38 s vs 0.85 s	Two published recommendations for the same restaurant room differ by more than double. There is no default target, only a brief.	DIN 18041 and Rindel (2018), compared in Steffens et al., 2021

By the time a room is built, these surfaces are fixed. Sound belongs in the finishes and ceiling conversation, coordinated with a specialist acoustic consultant where the project needs one.

Sources are independent published research. Figures describe the studies cited and are not projections for any individual venue.

Why RIBA Stage 2 is the true window

Most projects reach us at RIBA Stage 2 or 3. Earlier is better; later is workable. Unlike a finish sample that can be swapped late, the consequences of loudspeaker positions, cable routes and acoustic treatment compound with every stage that passes without them.

2	Concept Design	THE IDEAL	Loudspeaker positions inform layouts and sightlines. Acoustic treatment is built into the material palette with the acoustic consultant. Infrastructure is planned alongside services, and the budget is set before value engineering erodes intent. At this stage, sound is architecture.
3	Spatial Coordination	VIABLE	Loudspeaker types can still be coordinated with the aesthetic. Reverberation risks are raised before they become costly to resolve. The specification can be locked against contractor substitution. Integration is possible, but the design is no longer shaped by it.
4	Technical Design	COMPROMISED	The design is fixed. Audio must fit around decisions already made, and every integration carries a visual cost. The system serves the building; the building no longer serves the sound.
5	Manufacturing and Construction	REMEDIAL	Ceilings close and finishes go in. What could have been designed in is now added, and it looks added, because it was.

Once engaged, we stay with the project through to commissioning.

RIBA 2 to 3: System blueprint Site survey, loudspeaker layouts coordinated with the reflected ceiling plan, coverage and zoning, DSP signal paths and infrastructure requirements issued to the design team.	RIBA 4: Engineered procurement Component-level specification chosen on performance and appearance, tender-ready documentation and contractor coordination.	RIBA 5 to 6: Precision commissioning Installation oversight, room tuning and DSP alignment by measurement microphone, as-built documentation and handover.
--	--	--

More loudspeakers are not automatically better.

The objective is the right loudspeakers, in the right positions, operating at the lowest level that achieves consistent coverage.

Throw

How far must the sound travel?



Short throw - cocktail bar

Coverage

Where should it go, and where not?



Controlled hotel lounge

Output

How loud, and for how long?



Background - restaurant

Visibility

Should guests see it at all?



Visible - private residence



Long throw - hotel atrium



Uncontrolled - shopping mall



High-output - club



Discreet - gallery

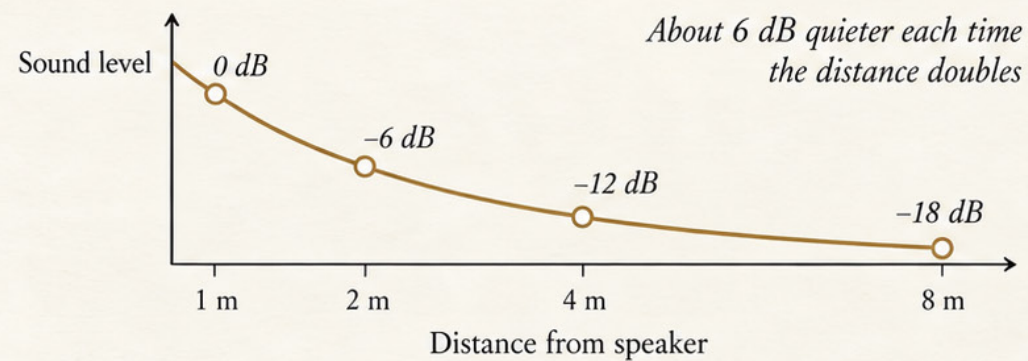
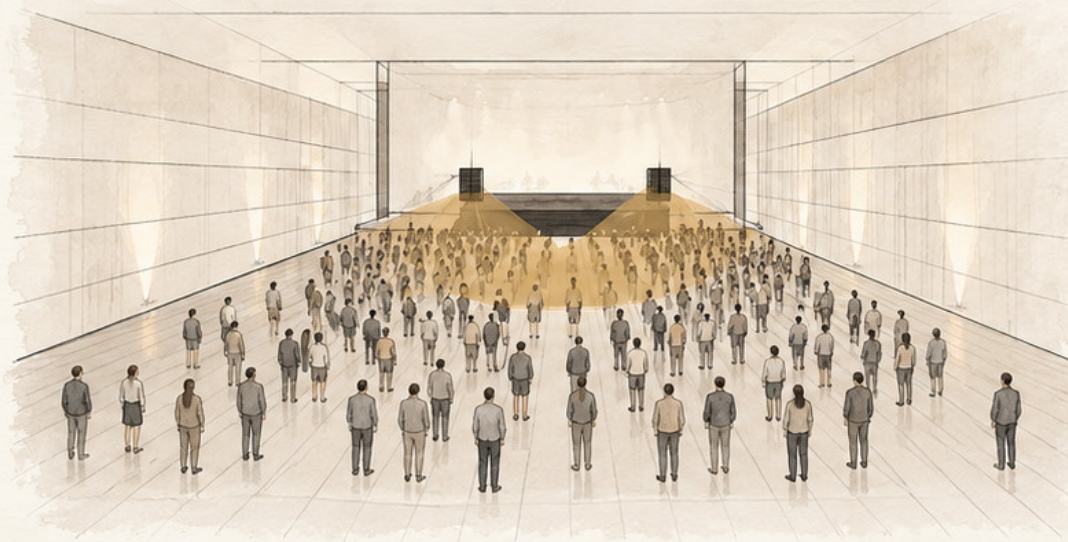
Before any product is chosen, answer four questions: throw, coverage, output and visibility. The brief decides the loudspeaker, not the equipment list.

Throw and consistency

Large venues need more than output. They need consistency from front to back.

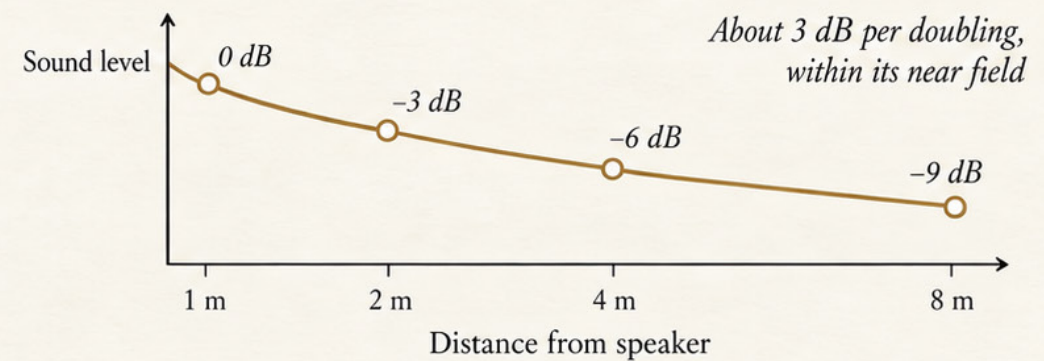
Point source

Steeper fall over distance



Line array

Gentler fall over distance



A single cabinet loses about 6 dB each time the distance doubles, so at an arena or a large live event the front of the crowd hears a very different show from the back. A line array, flown as a tall vertical source, loses about 3 dB per doubling within its near field, so the back hears something much closer to the front. It is the right tool for scale, and the wrong one for an intimate room.

Directivity: keeping sound where it is needed

The room should hear the system, not the reflections around it.

Uncontrolled dispersion

More spill and reflections



Controlled directivity

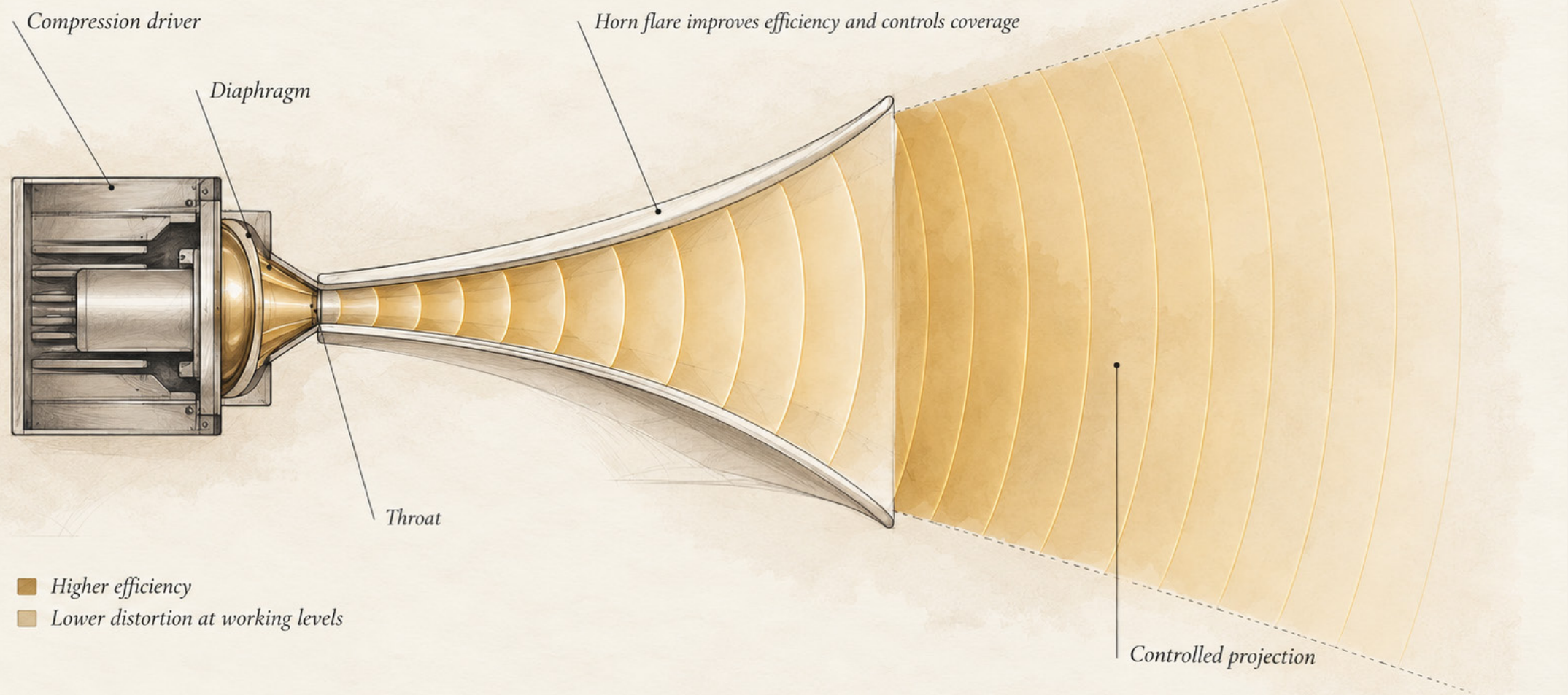
More useful sound on guests



A loudspeaker with wide, uncontrolled dispersion puts as much energy onto glass, plaster and ceilings as onto guests. That energy returns as reflections, the room gets louder, and guests raise their voices to compensate. Controlled directivity puts the sound on the tables and keeps it off the surfaces around them. It can come from a horn, a waveguide, an array or careful aiming: the specification, not the shape of the cabinet, decides the result.

Horn loading

Higher efficiency, less movement and more deliberate coverage.



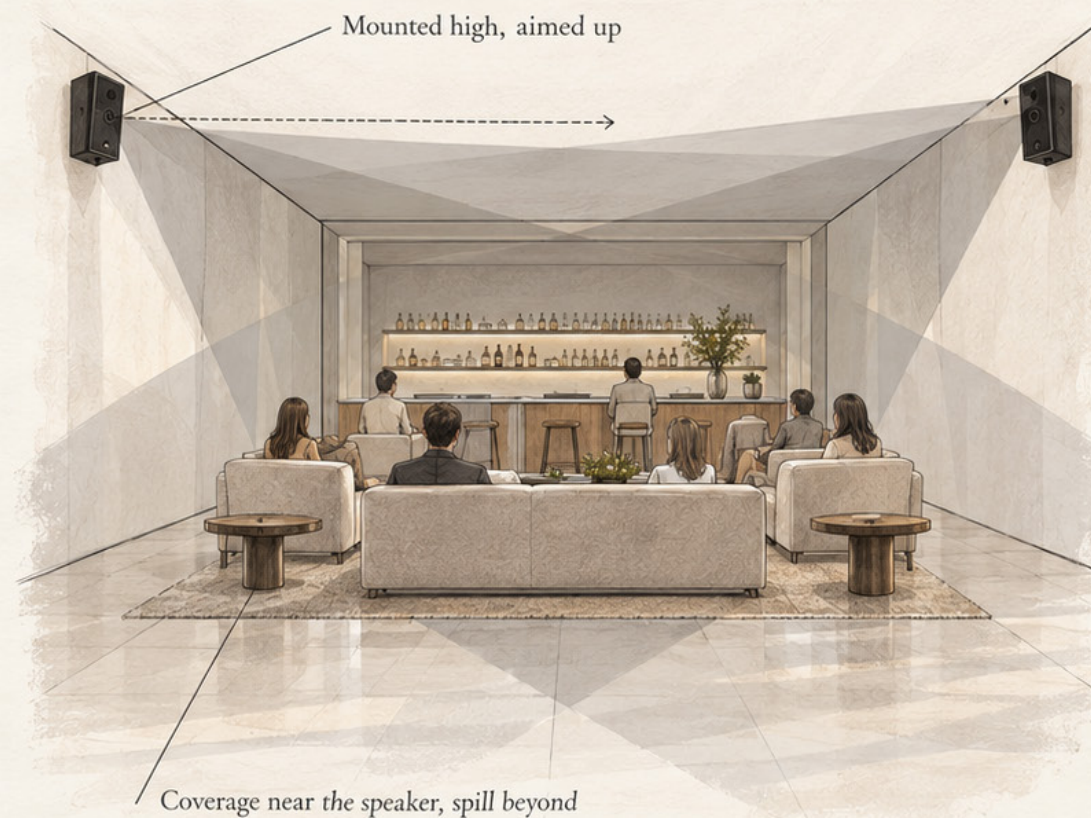
A horn couples a small, stiff diaphragm to the air. The result is higher efficiency: more acoustic output from each watt of amplifier power, less diaphragm movement for the same level, and lower distortion at working levels. The horn also sets the coverage angle, so sound is placed rather than sprayed. Many compact loudspeakers use a small horn or waveguide on the tweeter, which controls the high frequencies. Larger horns and waveguides hold their pattern further down the frequency range, whether in a sculptural horn or a well-engineered cabinet.

The right loudspeaker for a small room

The room should dictate the loudspeaker, not the brand name.

Oversized for the room

Long-throw loudspeakers with more reach than the room needs



Matched to the room

Short throw and controlled coverage, aimed at the seating



Small bars and restaurants are routinely fitted with long-throw, high-output loudspeakers, often because the name is familiar rather than because the room needs them. Mounted high and turned up, they create hot-spots on the nearest tables and spill onto every hard surface. A loudspeaker matched to the room, with a short throw and controlled coverage aimed at the seating, delivers even sound at a lower level. In hard, intimate rooms that is often a horn-loaded design; in others it may be a compact point source, a column or a distributed system. The principle is simple: use only the throw the room actually needs.

Designed into the architecture

Integration is about control as much as appearance.



Where the scheme calls for discretion, integration is about more than appearance. A slim column loudspeaker recessed flush into a wall keeps its energy in a tight vertical band at head height, off the floor and ceiling, while its finish matches the wall around it.

The loudspeaker as an object

Sometimes visibility is the design decision.



On terraces, pool decks and in landscape, a downward-firing driver over a reflector spreads sound evenly in every direction from a form that reads as sculpture or furniture. It suits ambient and background levels, not tightly controlled high output.

A framework for exceptional audio

I Deliberate placement

Every loudspeaker is either celebrated or concealed, never simply tolerated. Where the scheme carries a statement, we specify sculptural loudspeakers as focal points, coordinated with the architectural rhythm, the lighting scheme and the joinery. Where it does not, we integrate them into walls, ceilings and millwork. Either way, cabling runs within joinery, invisible to guests and accessible to engineers.

II Coordinated acoustics

Superior hardware in a poor room still sounds mediocre. We model loudspeaker coverage early, identify where volumes and finishes will work against the system, and raise those risks before they become costly to resolve. Where formal room or building acoustic design is needed, we work alongside the specialist acoustic consultant, so treatment is designed into the palette rather than added afterwards. We do not issue acoustic reports, licensing noise assessments or compliance certification.

Our Cognitive Load Index framework adds a human measure: how hard each room asks the people in it to work, assessed room by room rather than as one specification across a building.

III Operational simplicity

A beautiful system that no one can operate is a failed system. We specify intuitive control interfaces designed for daily use by non-technical hospitality staff. Every installation ends with a structured handover, operating documentation and an ongoing support plan.

Sound, room and operation are designed as one system.

A members' listening lounge beneath Chotto Matte, Soho, London

DESIGNED BY NADIA SOUSA, SUPERFUTURES / FEATURED IN MONDO-DR



The context

Claude's is defined by atmosphere rather than scale. It is a compact, immersive basement lounge that moves through the evening from social ambience to late-night listening, and intimacy carries the whole guest experience.

The architectural challenge

Low ceilings put every loudspeaker close to guests, so output had to be controlled and directional, without hot-spots or energy thrown into the ceiling. Integrated LED geometry and curved wall treatments created complex reflective surfaces that would expose any misjudgement. The design language left no room for visible compromise; every element in the space carries deliberate aesthetic weight.

The resolution

We specified a curated, horn-loaded Pequod Acoustics system: Ceiling mounted Ostro Coaxials coupled with Ovoid 18-inch bass-reflex subwoofers for primary coverage, Zephyrus 6-inch fills for near-field detail in the intimate seating zones, and the Borea 12-inch subwoofers for low-frequency reinforcement. Horn loading gave the pattern control the low ceilings demanded, placing sound on the seating rather than into the ceiling. Each loudspeaker was positioned as a deliberate sculptural element within the architectural composition.

The result

Presence through spatial geometry rather than volume. Guests hear tonal continuity as the room moves from relaxed social evening to immersive late-night listening, and the loudspeakers read as part of the interior rather than an interruption to it.

A consultancy for design-led spaces

Sculptural or seamless	We specify statement loudspeakers as spatial elements where the scheme calls for it, and integrate them invisibly where it does not.
Collaborative finishes	We work directly with interior designers to align loudspeaker finishes with the material palette, so every surface a guest sees belongs to the scheme.
Early coverage modelling	We model loudspeaker coverage and level across the room at concept stage, so zoning and placement are resolved before ceilings are drawn.
Preferred partners, not one maker	We work with a small group of preferred partners across sculptural, architectural and high-performance loudspeakers, and specify whichever best suits the room on performance and appearance.
Alongside your acoustic consultant	Room and building acoustics stay with the specialist. We make sure the system and the room are designed for each other.
Operational handover	We commission, tune and hand over a system the team can run, with training and an ongoing support plan.

We work across hospitality, private residences, arts and cultural spaces, and recording studios, in the UK, the UAE and Saudi Arabia.

Completed projects typically run between £20,000 and £120,000 across design, specification, hardware and commissioning. Design and consultancy can be engaged on their own, with procurement and installation by another contractor.

Ready to make audio a calculated design feature?

Book an Audio Strategy Review

A 30-minute working session on your concept, layout and design intent. We will cover:

- I Loudspeaker zones and placement principles for your spatial geometry. 16
- 2 Early acoustic and coverage risks, and how to resolve them before they compound.
- 3 A clear path from concept through documentation to commissioning.

To make the most of the session, bring the latest plans, reflected ceiling plans, finishes information and the intended use of each room.



Sonic Design Studios

hello@sonicdesignstudios.com

+44 7852 303 939

sonicdesignstudios.com