COSMIC PRODUCTION

A FIELD GUIDE FOR DESIGN PROFESSIONALS

The architect's guide to AV.

How to plan audio, video, control and infrastructure into hotels, restaurants, villas and yachts — written for the people who draw them.

Cosmic Production • Split, Croatia cosmicproduction.hr Free to share

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A short letter to the person holding the pen.

Many AV problems are decided long before anyone calls an AV company: a ceiling with no room for a speaker, a rack with nowhere to go, a terrace with no cable to it. This is the document we wish every architect had when the project started — short, technical only where it has to be, and written for you.

> “The earliest decision an architect makes about sound is whether to make a decision about sound at all.”

What this guide is

A practical reference for bringing AV into concept and developed design: space types, acoustic basics, infrastructure, equipment, roles and a site-survey checklist.

What it is not

It is not acoustic, structural or electrical design. Room acoustics, sound insulation, power and earthing are designed and signed by the responsible consultants. AV planning is coordinated with them.

How to use it

Read Chapter 1 before the first owner workshop. Take the checklists in Chapter 6 to site. Treat every rule of thumb as a starting point to confirm against the selected equipment.

A late AV decision costs more at every phase.

A speaker, a cable run and a rack are cheap. The drilling, demolition, repainting and re-commissioning around them are not. The earlier AV joins the project, the less the building has to be rebuilt to accept it.

Concept & schematic

AV is drawn in.

Zones, equipment positions and the equipment room are part of the space plan. A change costs a drawing revision.

Developed design

Coordination starts late.

Ceilings, joinery and lighting are already resolved. AV has to negotiate for every square metre.

Construction documents

Infrastructure by request.

Pathways and back-boxes arrive through change requests and site instructions.

After handover

Retrofit.

Surface conduit, chased walls, patched ceilings — and a system that looks added on.

> Every project is different. The direction is not: the later the decision, the more of the building it touches.

The architect's role in an AV project.

You are not expected to specify speakers, but you are the person who can make sure they have a home. These are the four things an AV integrator needs from you, roughly in this order.

01

Mark the AV envelope early.

Identify which rooms will have ceiling speakers, screens, projectors, microphones or controls — even at concept stage — and mark them on the plans.

02

Reserve an equipment room.

A ventilated, serviceable space, sized from the equipment list and ideally central to the zones it serves. Treat it like an electrical room, not a hallway cupboard.

03

Route pathways and back-boxes.

Cable pathways are cheap to draw and expensive to chase. Even empty conduit, capped and labelled, prepares the building for later.

04

Coordinate ceilings and surfaces.

AV competes with lighting, sprinklers, diffusers and joinery for the same surfaces. Resolve it in the reflected ceiling plan, not on site.

Five questions to ask at concept stage.

Print this list and bring it to the first owner workshop. Honest answers here prevent much of the conflict that otherwise surfaces during construction.

Q.01

Who will run the room?

Hotel staff, a sound engineer, a guest with a phone, or no one? This sets how complex the control has to be.

Q.02

What is the loudest moment?

Background music, a live DJ, wedding speeches? The peak use sets headroom, amplifier sizing and speaker count.

Q.03

Where does sound stop?

Zoning between guest rooms, restaurants and pool decks defines the audio layout — and the noise complaints.

Q.04

What gets seen?

Equipment as an architectural feature, or out of sight? This finish-level decision narrows every device choice after it.

Q.05

Who maintains it in year five?

A local integrator, an in-house technician, or no one? Long-term support shapes brand choice and standardisation.

02

PART TWO OF SIX

Spaces.

Seven space types that come up again and again in hospitality and residential projects — and what the AV brief looks like in each.

Hotel lobbies & atria.

The first thing a guest hears. Lobbies are often tall, hard-surfaced and double-height — acoustically among the hardest spaces in the building. The AV should be felt before it is noticed.

Speaker placement is a ceiling problem.

In tall volumes, pendant or coffer-mounted distributed speakers usually work better than surface-mounted ones high on the walls.

Level is low; clarity is everything.

Announcements and gentle background music, not a club. Plan for intelligibility, not volume.

The reception desk needs local control.

Volume and source from a wall plate the staff can reach, not only from an app.

Restaurants, bars & lounges.

The brief changes through the day: quiet lunch, busy dinner, late-night DJ — three rooms in one shell.

Zone by time of day.

Independent zones for bar, dining room and terrace, with presets for each service period.

Plan for a temporary DJ position.

Even if it is not in the brief, a guest will eventually ask for one. Power, a network point and an audio connection.

Soft surfaces matter.

Upholstery, curtains and absorptive ceiling elements change how loud a full room feels. How much is needed is a question for the acoustic consultant.



Restaurant Level, Split — audio and lighting integration by Cosmic Production. Case study: cosmicproduction.hr/case-studies/restaurant-level-split/

Wellness, spa & quiet zones.

The one space where the goal is the absence of noise. Spa AV is a craft of restraint: gentle background, no visible hardware, no harsh switching, no notification beeps.

Quiet asks more of the system.

At low listening levels, hiss and distortion are easier to hear than in a loud bar. Choose equipment for quality at low volume.

Hidden, but accessible.

Flush or trimless ceiling speakers; the service hatch in the back of house, not in the treatment room.

Rated for wet areas.

Near pools, hammams and steam rooms, use equipment with an ingress-protection rating suited to the location, checked against the manufacturer data and the electrical design.

Ballrooms & conference rooms.

Multi-purpose rooms whose only constant is change. AV here is permanent infrastructure that hosts temporary productions — the architecture should make load-in easy, not a fight.

Rigging points are a structural decision.

Allowable loads per point belong on the ceiling plan, defined and signed by the structural engineer.

Floor boxes win.

Recessed floor boxes with AV, network and power on a regular grid serve layouts nobody has drawn yet.

Decide sound separation early.

How much separation late-night events need is a building-acoustics decision. Bring the acoustic consultant in before walls, doors and ceilings are fixed.

Residential villas.

Owners of high-end homes often want music in every room, a visible speaker in none, and one interface their guests can use without instructions.

One interface, every room.

One way of controlling audio, video, lighting and shading — typically wall keypads plus a phone app.

Indoor—outdoor continuity.

Pool, terrace and outdoor kitchen are living spaces. Treat them as audio zones from day one.

Flush is often the default.

Trimless or flush-plastered speakers are frequently the expectation, not the upgrade. Decide early, because they go in with the ceiling.

Yachts & marine.

Floating buildings with their own physics: salt, vibration, DC power, tight spaces and fixed yard dates.

Marine-grade components.

Stainless grilles, UV-resistant cones, sealed enclosures. Standard architectural speakers are not built for salt and sun.

Zones follow use, not decks.

Saloon, flybridge, foredeck and swim platform — each independent, each with presets for how it is used.

Pre-cabling belongs to the build.

Cable routes through a hull are a build-stage task. Adding them in a refit is slow and costly.

Outdoor & poolside.

On the Mediterranean, the most beautiful rooms of a property are often outdoors — and that is where the easiest AV mistakes happen.

Coverage, not loudness.

Several smaller speakers aimed at the seating usually beat two large ones on a pole.

Plan for the bura.

Brackets, fixings and conduit must take the wind. Outdoors, speakers often fail mechanically before they fail electrically.

Keep sound on your side of the line.

Aim and zone so the sound stays with the guests, and check the local noise limits at the property line.



Radisson Blu Resort Split — poolside audio for the pool bar and daybed area by Cosmic Production. Case study: cosmicproduction.hr/case-studies/radisson-blu-split/

03

PART THREE OF SIX

Acoustics.

Why a room sounds the way it does, and the architectural choices that shape it before a speaker is hung. This chapter builds intuition; it does not replace an acoustic consultant.

Reading a room before it exists.

A little acoustic instinct is cheap insurance. Three geometries explain why many hospitality rooms work or don’t, before anyone measures anything.

A

Parallel hard walls.

Flutter echo between two facing reflective surfaces — stone, glass, polished plaster. The fix is soft material, a change of angle, or both. Watch for long rectangular dining rooms with stone walls.

B

Tall vaulted volume.

Long reverberation makes speech hard to follow at a distance. Distributed speakers close to the listener usually beat one large speaker overhead. Watch for atrium lobbies and vaulted halls.

C

Mostly-glass envelope.

Glass reflects sound inside and lets low frequencies out to the neighbours. Laminated glazing, soft interior surfaces and aimed speakers all help. Watch for seafront restaurants.

Stone, glass, water, arch.

Four materials and shapes found in nearly every Dalmatian project, and what they do to sound.

Stone

The Dalmatian default.

Brač and Korčula limestone are beautiful and highly reflective. Plan compensating soft material elsewhere in the room.

Glass

The seafront tax.

Large glazing reflects mid and high frequencies and leaks low ones. Acoustic interlayers can be worth the specification line.

Water

The unseen reflector.

Pools and the sea reflect sound towards nearby rooms and balconies. Aim speakers down at the listeners, not across the water.

Arch

The focusing vault.

Vaulted ceilings can focus sound at one or two points — rarely where the speaker is. Distributed coverage beats one central position.



Bar Sistema, Split — speaker against a stone wall, audio integration by Cosmic Production. Case study: cosmicproduction.hr/case-studies/bar-sistema-split/

Speaker placement: three rules of thumb.

Worth a conversation at reflected-ceiling-plan stage, not after first fix. The final positions come from the selected speaker's data and the room.

Spacing follows ceiling height.

A common starting point for ceiling speakers is a spacing of roughly 1.5 to 2 times the ceiling height. The chosen speaker's coverage decides the final grid.

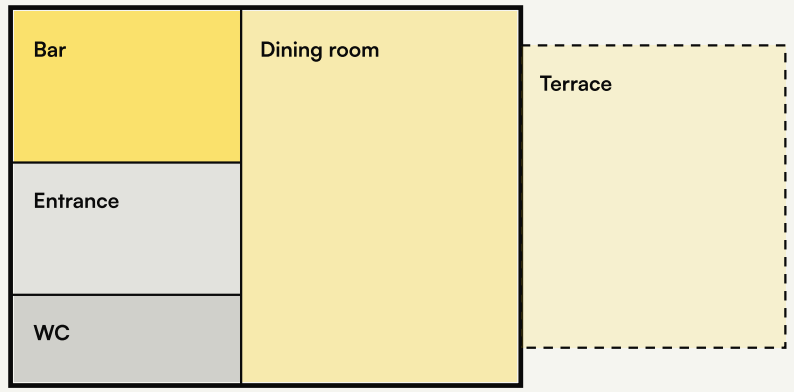
Aim at the ear, not the floor.

Coverage should overlap at seated or standing head height, where people actually listen.

Low frequencies need their own plan.

Bass spreads in every direction, but rooms make it uneven. Two smaller subwoofers placed apart often behave better than one large one.

ILLUSTRATIVE — NOT A TECHNICAL DRAWING



Colours mark zones of use. No speaker positions or coverage are shown.

Illustrative zoning concept for a generic café. Each zone can have its own source and volume. Not a real project.

04

PART FOUR OF SIX

Infrastructure.

The four things AV needs from the building: a room, a pathway, a power supply and a network. None of them shows up in a mood board.

The equipment room: what & where.

Any AV system of some complexity lives in a rack, and the rack lives in a room. That room is part of the building design.

Size

Sized from the equipment list, with working clearance at the front and back of each rack.

Cooling

Equipment produces heat. Cooling and a failure alarm are designed by the mechanical engineer from the equipment's heat load.

Power

A dedicated supply, with UPS for sources and control, designed by the electrical engineer.

Location

Central to the zones it serves, so cable runs stay short, and serviceable without crossing a guest area.

> Dimensions, heat loads and circuit ratings depend on the selected equipment. We supply the equipment data; the responsible engineers design to it.

Cable pathways & conduit.

Pathways cost far less to build in than to retrofit. Use this as a checklist when reviewing reflected ceiling and electrical plans.

> “Pull-string everything. The cable inside the conduit can always be changed later — the conduit itself cannot.”

Speakers

One route per speaker.

A clean pathway from the equipment room to each speaker position, without sharp bends.

Video

Per display or projector.

A route for the video signal plus power and a network point, with the back-box flush with the wall finish.

Risers

Backbone between floors.

Vertical routes for fibre, network and audio. Leave spare capacity from day one.

Spare

One empty, capped.

An empty conduit, capped and labelled — one of the cheapest items on the project, and the one you will be glad of later.

Conduit sizes and routes are confirmed against the selected cable types and coordinated with the electrical design.

Power, earthing & UPS.

Many AV noise problems are power problems in disguise. A clean, separate supply removes a common source of hum and interference.

A dedicated AV circuit.

Separate from lighting, kitchen and HVAC loads, which create the electrical noise AV picks up.

One earth reference.

A common earth reference for the AV equipment helps prevent ground loops and hum. Its design belongs to the electrical engineer.

UPS for sources and control.

A short power dip should not mean a reboot during a wedding speech. Sources and processing on UPS; amplifiers usually on mains.

> We state the AV power needs. We do not provide certified electrical design: the electrical designer of record designs and signs the installation.

Network & AV-over-IP.

Modern AV is increasingly another tenant on the network. Cabling and IT need to agree on it before commissioning.

Cabling

Structured cabling everywhere AV goes.

Every speaker zone, display, keypad and wireless access point needs a network point. Cat 6A is a common choice where audio-over-IP or PoE devices are planned; the IT consultant decides.

Fibre

Backbone between equipment rooms.

Fibre between floors, with spare strands. Copper has distance limits, and video over IP uses real bandwidth.

VLAN

Separate from guest Wi-Fi.

AV control and audio-over-IP on their own network segments, with quality-of-service rules agreed with IT.

> The AV integrator does not need to run the network, but should be in the room when the IT consultant decides how it is segmented.

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PART FIVE OF SIX

Equipment & budget.

What goes into the rack and the ceiling, and how to talk about AV cost with an owner before the design is locked.

Equipment categories at a glance.

The six families of hardware in almost every installation — useful when an owner asks what is actually in the room.

01

Loudspeakers

Ceiling, surface, pendant, column or subwoofer. Architectural or live-production grade, depending on duty.

02

Amplification

Multi-channel amplifiers in the rack, sized by speaker count and the loudest planned use — not by room volume.

03

Processing (DSP)

The brain of the audio system: routing, equalisation, scheduled scenes and paging.

04

Sources & microphones

Streaming players, microphones, DJ inputs and wireless microphones for events.

05

Displays & video

Commercial displays, projectors and LED walls, chosen for ambient light and viewing distance.

06

Control

Wall keypads, touch panels or an app — ideally one interface for the functions the owner actually uses.

> Brand choice follows the project: duty, finish, budget and long-term support. Our case studies name the equipment actually installed.

What drives the AV budget.

AV cost depends far more on use and finish than on floor area, so we price per project. These are the drivers to discuss with the owner before the design is locked.

Zones and use

How many independent zones, and whether any must handle live music, DJs or events.

Visibility

Exposed, surface, pendant or flush: the finish level changes both the equipment and the installation work.

Video and control

Screens, projection and one-interface control add equipment, programming and commissioning time.

Environment

Outdoor, wet, marine and heritage locations need rated equipment and more installation work.

Infrastructure readiness

Pathways and an equipment room planned in design cost less than the same things retrofitted.

Support after handover

The agreed form of service and support for the installed system is part of the budget conversation.

> Ask for an indicative range once zones and use are known. A detailed bill of quantities is a separately agreed scope.

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PART SIX OF SIX

Process.

Who does what, and when — a simple responsibility matrix, a site-survey checklist and the way we work with design studios.

Roles & responsibilities.

A simplified responsibility matrix for AV scope on a hospitality project. Bring it to the kick-off meeting and amend it in writing.

TASK	ARCHITECT	OWNER	AV INTEGRATOR	MEP ENGINEER	MAIN CONTRACTOR
Define AV scope and experience	C	A	R	I	I
Reserve equipment room and back of house	R	A	C	C	I
Reflected ceiling plan and speaker layout	R	I	C	I	I
Conduit, back-boxes and cable pathways	C	I	R	C	A
Dedicated AV power and earthing	I	I	C	R	A
Equipment supply and installation	I	A	R	I	C
Commissioning, tuning and sign-off	C	A	R	I	I
Staff training and ongoing support	I	A	R	I	I

> R Responsible • A Accountable • C Consulted • I Informed. An example only: responsibilities are set per project and per contract.

The site-survey checklist.

Bring this to a walk-through. The more of it you can answer, the fewer questions come back after a first proposal.

- ☐ **Floor plans, marked.**
  Latest revision, with zones outlined and the use of each labelled.
- ☐ **Wall finishes.**
  Stone, glass, plaster, wood — and which cannot change on heritage grounds.
- ☐ **Existing AV to keep.**
  Speakers, displays, microphones — what stays, what goes.
- ☐ **Noise limits.**
  At the property line, by local rules and by agreement with neighbours.
- ☐ **Project programme.**
  Key dates: first fix, second fix, soft opening.
- ☐ **Brand standards.**
  Group AV standards, if the property belongs to a hotel group.
- ☐ **Reflected ceiling plans.**
  Lighting, sprinklers and diffusers shown, even if not final.
- ☐ **Equipment room candidate.**
  A nominated back-of-house location, ideally central.
- ☐ **Furniture plan.**
  Affects coverage, sightlines and microphone positions.
- ☐ **Staff to train.**
  How many, and who: F&B, reception, technical.
- ☐ **Budget envelope.**
  Total available, and where AV sits in the cost plan.
- ☐ **Reference rooms.**
  Three rooms, anywhere, that sound and look the way the owner wants.
- ☐ **Ceiling heights and finishes.**
  Per zone; note vaulted, coffered or pitched surfaces.
- ☐ **Available power.**
  Spare capacity for AV, and whether three-phase reaches event spaces.
- ☐ **Opening hours and use.**
  Day and night programme, private events, closures.
- ☐ **Network and IT contact.**
  Vendor, switches, PoE budget, network segmentation policy.
- ☐ **Permits and heritage limits.**
  Is surface mounting allowed? Is drilling permitted?
- ☐ **Weather exposure.**
  Wind direction, sea-spray reach, sun on screens.

From the plan to a system in use.

Your studio designs the space; we work out the AV. We can take the whole AV scope or join a single phase alongside your existing engineer, supplier or contractor.

01

First conversation

The space, its use, the project stage and the drawings you already have.

02

Agreed scope and technical design

AV zones, equipment positions, infrastructure requirements and a bill of quantities, coordinated with the design team.

03

Installation, set-up and testing

Coordinated with the works on site; settings matched to the agreed use.

04

Handover and support

A walk-through with staff, documentation, and a support arrangement agreed for the specific system.

> Scope and fee for technical design and the bill of quantities are agreed before work starts.

INSTALLED WORK

Installed systems you can look at.

Three AV integration projects in Split, each documented as a case study on our website with photos and the equipment used.



Restaurant Level, Split

Audio and lighting integration for a restaurant and bar: speakers, lighting scenes, programming and staff training.

cosmicproduction.hr/case-studies/restaurant-level-split/



Radisson Blu Resort Split

Poolside audio for the pool bar and daybed area, with background music and positions for a DJ.

cosmicproduction.hr/case-studies/radisson-blu-split/



Bar Sistema, Split

Audio for the main bar and a secondary area, with simple tablet control and staff training.

cosmicproduction.hr/case-studies/bar-sistema-split/

> More AV integration case studies: cosmicproduction.hr/case-studies/

Glossary of AV terms.

The acronyms an architect hears on an AV call, defined briefly enough to nod through the meeting.

SPL
Sound pressure level: loudness in decibels, measured at a stated distance.

HDBaseT
Transport of HDMI video, control and power over one category cable.

Plaster-in / trimless
A ceiling speaker plastered flush with the ceiling, with no visible bezel.

Zone
An area of audio with its own source and volume control.

Commissioning
Setting up, tuning and checking an installed system before handover.

RT60
Reverberation time: seconds for a sound to decay by 60 dB. The headline acoustic number for a room.

PoE / PoE+
Power over Ethernet: a network cable carrying data and DC power to a device.

Back-box
The recessed enclosure a wall device (keypad, microphone plate) installs into.

Ground loop
The hum that appears when connected devices see different earth potentials.

DSP
Digital signal processor: the unit that routes, mixes and tunes the audio.

Line array
A vertical column of speakers working as one source, for long throw and even level.

Headroom
The margin between the loudest peak played and the level where the system distorts.

UPS
Uninterruptible power supply: battery backup that bridges short mains outages.

Dante / AVB
Audio-over-IP protocols: audio carried as network packets instead of analogue cable.

70 / 100 V system
Constant-voltage distribution for many small speakers on long runs, common for background music.

Subwoofer
A loudspeaker dedicated to the lowest frequencies.

FOH
Front of house: the position from which a live event is mixed.

WHAT NOW

Which stage is your next project at?

Send us a short description or a drawing. We will suggest where AV fits in and agree the next step with you.

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Useful for a first conversation

01 Use and location of the space

02 Project stage and planned construction window

03 Floor plan or existing visualisations

04 Sound and video needs, and the budget frame if known

> Scope, deliverables, timing and fee for technical design are agreed before work starts. This guide is free to share; attribution appreciated.