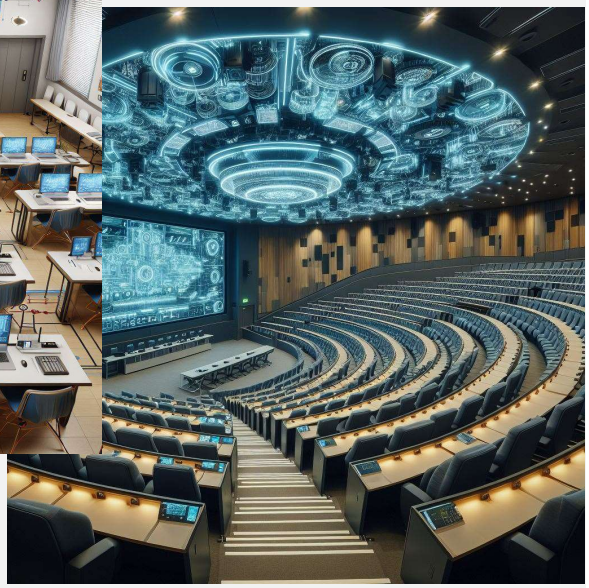
La Trobe University
Learning Space AV Design Guidelines

Version 1.5 Mar 2024



Design Philosophy

Let's embark on an exploration of teaching space audio-visual design, and delves into the intricate interplay of technology, pedagogy, and spatial considerations, shaping optimal learning environments.

User-Centric Approach

The heart of AV design lies in understanding the end users—the students and instructors who inhabit these spaces. Consider their needs, preferences, and daily interactions with technology. Prioritize:

- Intuitive Interfaces: A well-designed system should be user-friendly, minimizing the learning curve.
- Seamless Integration: The AV components should seamlessly blend into the teaching environment.

Learning Objectives and Modes

Define the purpose of the space:

- Lectures: Large screens, clear sightlines, and robust audio for effective dissemination of knowledge.
- Discussions: Interactive displays, collaborative tools, and flexible seating arrangements.
- Multimedia Presentations: High-resolution projectors, adaptable layouts, and dynamic content sharing.

Modularity and Scalability

Teaching spaces evolve. Design for the long haul:

- Modular Components: Opt for interchangeable parts. When technology advances, swap out without disrupting the entire system.
- Future-Proofing: Anticipate upgrades. Can the room accommodate augmented reality, virtual labs, or holographic displays

Multiple Teaching Modes

A dynamic space caters to diverse pedagogical approaches:

- Flipped Classrooms: Interactive displays, writable surfaces, and movable furniture.
- Collaborative Work: Group seating, wireless connectivity, and shared screens.
- Hands-On Labs: Document cameras, 3D printers, and interactive whiteboards.

Sightlines and Screen Specifications

Optimal screen positioning ensures everyone has a clear view:

- Avoid Obstructions: Ceiling-mounted projectors or large displays prevent shadows and obstructions.
- Sightlines: Test from various seating positions. No student should strain to see the content.

Audio Excellence: Reinforcing Speech

Crystal-clear audio is non-negotiable:

- Microphones: Invest in quality lapel mics, handheld mics, or ceiling arrays.
- Speakers: Even sound distribution matters. Ceiling speakers or soundbars ensure audibility.

Inclusivity and Accessibility

Design for all learners:

- Closed Captioning: Real-time captions benefit hearing-impaired students.
- Transcripts: Make lecture transcripts available online.
- Assistive Listening Devices: Enhance audio clarity for those with hearing aids.

Connectivity and Network Infrastructure

The backbone of modern education:

- Wi-Fi: Reliable, high-speed connectivity for content sharing and online resources.
- Network Security: Safeguard against cyber threats.

Projector Considerations

Projectors remain relevant:

- Ceiling-Mounted: Prevent shadows and glare.
- Short-Throw: Ideal for smaller rooms.
- Interactive Projectors: Foster engagement.

Durability and Practicality

Choose wisely:

- Durable Materials: Furniture, walls, and flooring withstand daily wear.
- Regular Maintenance: Dust filters, bulb replacements, and software updates.

Color Schemes and Comfort

Aesthetics impact learning:

- Colors: Calming hues promote focus.
- Ergonomic Furniture: Comfortable seating and adjustable desks enhance the overall experience.

In Conclusion

In conclusion, teaching space AV design transcends technical specifications. It's an art that marries functionality, adaptability, and aesthetics. As we shape these spaces, let's remember that every pixel, every decibel, and every ergonomic choice contributes to the symphony of learning.

Administration

Primary Objectives of the Design Guidelines

In summary the primary objectives of the Teaching *Design Guidelines* are to:

- Alignment with I&O standards and requirements.
- Define a minimum level of functionality and installation quality for meeting rooms.
- A consistent experience for end users, designers, and support personnel for all teaching room AV system deployments.
- Provide guidance to consultants, integrators, architects, and other stakeholders regarding the selection, design, and installation of audio-visual components and systems.
- Deployment of room audio-visual systems that can be supported in a timely and cost-effective manner.
- Define equipment types, enabling consolidation of spares and simplifying vendor support.

Consideration should be given to:

Variability and difference of people's backgrounds, capacities and physical abilities, differences in cultural interpretation of space and behaviour.

The specific physical contextual qualities and characteristics of the *Project* site and various *campus*es.

The availability, layout, and capacity of existing infrastructure services to the sites and adjacent areas.

The Whole of Life cycle cost of the elements & equipment being delivered via the *Project.*

The Collaboration *Design Guidelines* are required to be read as a whole, understood & adhered to by all *Consultants* across all disciplines.

The *Collaboration design guidelines* will apply to all new work (new build & refurbishment).The *Collaboration design guidelines* will apply to all *LTU Campuses* unless noted otherwise.

The Collaboration design guidelines are issued under the authority of the Manager Digital Futures Information Services.

Compliance with The AV Design Standards

As per the Consultant's Agreement and standard LTU contracts, it is the responsibility of all Consultants (or if no Consultant is engaged, the UPR) to ensure that the intent and requirements of the AV Design Guidelines are implemented in documents and in instructions to Contractors.

When a consultant is engaged, the version on the Design Standards displayed at that date on the I&O web page will be the Design Standards that are applicable to the Project. If amendments or revisions are made throughout the course of the Project's life, the Consultant is to review the amendments and advise the University Project Representative (UPR) what is required to accommodate the amendments. The UPR is to review and advise which amendments are to be incorporated into the Project.

Potential Departure from AV Design Standards

Potential Departure from AV Design Standards

There may be times where the Consultant considers there is a potential:

- conflict or error within the AV Design Standards, or
- uncertainty in the application of the AV Design Standards, or
- conflict between the Design Standards and reference documents, standards and/or regulations outside the Design Standards, or
- alternative that may be required.

As per the Consultant's Agreement, if there is a potential departure from the Design Standards, the Consultant is to follow the process outlined in that document.

The Consultants are not to assume that any deviations from the Design Standards will be supported and are to factor time taken to consider applications and contingencies in their design for when the deviations are not supported in their project programs.

I&O use the tabulated deviations when undertaking the annual reviews of the Design Standards to determine if any of the clauses require amending. This might be because a particular requirement is not being able to be regularly met or a more efficient/cost effective piece of equipment being specified by several consultants.

Room Designation

Room design considerations in this document are defined in the following groups:

- Interactive Displays for Teaching
- Flat Floor Teaching Basic
- Flat Floor Teaching Hybrid
- Flat Floor Teaching TEAL
- Learning Spaces Lecture Theatre
- Audio Only
- Digital Signage

Monitoring and Maintenance

Maintenance is an important component of a well-functioning system. It helps companies maintain their resources while controlling time and costs to ensure maximum efficiency of their systems, utilities and related facilities. Monitoring is an essential process for any enterprise system, it allows the gathering of data which is used as a basis for decision-making and learning processes. Monitoring provides information on where a system is at, at any given time relative to respective targets and outcomes. It helps to identify problems and improve performance, for this reason all of the components that form a meeting room solution capable of being monitored by Information Services will be monitored. This includes data relating to the health of audio-visual components, usage, occupancy, call quality, and other telemetry.

Video

Video presentation is used to describe the display of any visual content, including slides, images, documents as well as videos. LTU rooms use a variety of types and quantities of displays depending on room size and functionality. The use of multiple displays in some rooms ensures that everyone in the room is able to see the same content, while in other rooms different displays will show different things.

Equipment You Might Use

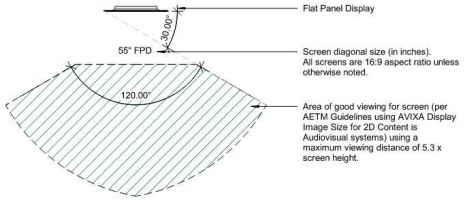
Flat Panel Single	**LCD or Flat Panel Displays**	Flat Panels look like your TVs at home. Each panel has their own source of light so they are generally bright and easy to see in most conditions. They come in wide range of sizes to suit the room arrangements however their maximum size tends to be 98 inches diagonal so they can't be used in the largest rooms.
Flat Panel Dual	**Dual Flat Panel Displays**	Some rooms (especially meeting rooms with a heavy emphasis on video conferencing) will use two flat panels, side-by-side to show a shared screen and video of the conference participants on two different screens. This has some advantages, however neither of the two screens will be centered to the table (affecting audience sightlines). In many instances a single larger screen (that can be centered to the table) may be preferable).
Confidence Monitors	**Confidence Monitors**	For larger rooms, flat panels may be used for the presenter to look at (rather than the audience). These displays are referred to as Confidence monitors. Such displays may not be as large as the main displays, but may show video conferencing content (so the presenter can see other participants) or the shared presentation (so the presenter can confirm where they are).
Projectors	**Projectors and Projection Screens**	Projectors are useful when a larger screens are required (>100" diagonal screen size) or when the screen should be hidden when not in use. Care should be taken to control lighting conditions in the room (such as sunlight and electric light) as projected images can be easily "washed out" by bright rooms and appear very dim. Projected Images will be shown either on white plaster walls or on retractable projection screens that are automatically deployed and retracted as part of the system control
Digital Whiteboard	**Digital Whiteboards**	These are special flat panels that are interactive using a touch screen. This has the advantages over traditional white or black boards as the content shown on the screen can be easily shared to a video conferencing session. Blank screens can be used for free drawing or digital content can be displayed and annotated using the supplied "pens. Content can also be manipulated using touch gestures like a tablet or smartphone.
Relay Screens	**Relay Screens**	For larger rooms, it may not be possible to install a main display of sufficient size to cover the whole of the audience area. The main screen size may (for example) be limited by the available ceiling height of the room resulting in an undersized main display. In this instance additional flat panel displays may be located further back in the room for use with audience members towards the rear of the room to clearly see the same content as is shown on the main display(s).

Video Ideas To Understand

Selecting a Screen Size

It is important that every member of an the audience can comfortably see a display and understand the content. There are limits to how far away from a given sized screen or how far away from the centre of the screen area a member of the audience can be and still comfortably view the content a screen.

Screen sizes should therefore be chosen by looking at the distance to the closest and furthest viewers in the audience and positioned based on an area of good viewing as defined by the diagram below:



Video Sources

Sources are devices can are either built into the room or are brought in when needed. Many spaces will have a **room PC** that can access LTU drives or other cloud drives. To allow for people to bring in their own devices (BYOD) cables are provided in many rooms. **USB-C fly leads** allow laptops to be connected to the video conferencing cameras, microphone and loudspeakers in the room, enabling users to use their own platform such as Teams, Zoom, Webex etc from their laptop. **HDMI fly leads** allow for video from a laptop to be sent to the room displays.

USB-C Fly Lead

HDMI Fly Lead

Single vs. Dual Screens

For some rooms that will use Video conferencing, the use of a single or dual screens should be considered.

Dual screens generally allow for more screen area, with each screen being used for a specific thing (e.g. shared screen on one side and video of participants on the other).

It is noted however that increasingly, platforms such as Teams and Zoom are increasing the amount of content they can show on screen, including adding chat text and other functions.

Dual screens may be very useful for video conferences but may not be as functional for a local presentation where video conferencing will not be used. As neither of the screens are centred to the viewing area, presentation content tends to be shown on both displays, resulting is a duplicated image.

It should be noted that in some screen arrangements the "shared screen" content will be shrunk (compared to the total screen area) to accommodate other content.

In many meeting rooms it might therefore be preferable to use a single large(r) display for both presentation and video conferencing. A typical single screen content arrangement is shown below

Audio

The audio system in a room with both play back content to local participants and capture local sound to present to video conferencing systems or lecture recording. The systems that make this happen can be quite complex and sometimes involve multiple components that you might not see. Key to successfully designing an audio system is ensuring that an even level of sound is reproduced throughout the listening area and unwanted acoustic effects are minimised. As many microphones are not optimised for certain applications, a wide variety of microphone types will be used to achieve all the functionality required.

Equipment You Might Use

	**Ceiling Recess Loudspeakers**	These loudspeakers are typically mounted above the whole of the listening area. They are good for producing an even coverage of sound. Although they can play back all sorts of audio content they are not best suited to high-output audio or that requiring a lot of bass frequencies such as Films or music. Typically used for video conferencing and general meeting rooms.
	**Front of House Loudspeakers**	Typically surface mounted loudspeakers located adjacent to the display area. These are better at reproducing audio for films and music content than ceiling recess loudspeakers as they tend to operate in a larger range of frequencies and at higher outputs. Typically used for presentation content in larger or high-end presentation spaces.
	**Soundbar Loudspeaker**	Loudspeakers integrated into the All-In-One (AIO) Soundbar mounted below the display in smaller meeting rooms. Typically fine for general use and effectively reproduce speech for video conferencing. Can't be effectively used in larger rooms as coverage does not remain even from front to back of the room.
	**Table Top Microphone**	Small boundary microphone located on table top for conferencing. These are typically subject to be covered by papers on the table or obstructed by objects such as laptop screens, however they do effectively get the microphone close to the local speakers which may be beneficial in acoustically difficult spaces.
	**Ceiling Microphones**	Large plate microphones recessed into or suspended below the ceiling. These are actually arrays of individual microphones that can be combined together using digital processing to "steer" the microphone around the room a pick-up different speakers in different locations. Very effective for conferencing but are not suitable for most "voice-lift" applications.
	**Soundbar Microphone**	All-In-One (AIO) soundbars contain microphone arrays that can be used for video conferencing. Tend to be effective in small rooms but struggle as the speakers move further away with increasing room (and table) size.
	**Wireless (Radio) Microphones**	Wireless microphones that can be worn by presenters or carried by hand. May be used for both local "voice-lift" and remote conferencing. These have the disadvantage that users have to actively retrieve them, put them on (or hold in their hand) to use them. There tend to be up to 2 channels of wireless mics in larger rooms so they can't amplify every in the space equally.

Audio Ideas To Understand

DSP (Digital Signal Processor)

Audio signals tend to require a degree of control and optimisation to function well in a space. For simple rooms the Video conferencing system has enough functionality to provide this control, however complicated spaces may require a dedicated Audio DSP. This device provides control over routing (which audio sources are sent where), level (how loud things are) and other audio processing such as filters and equalisation (EQ). These functions are used in combination to ensure the audio system is optimised for the room. DSPs may also provide AEC processing for complex spaces, however please note that DSPs provide a specific number of AEC channels (quantity varies by DSP model).

AEC (Acoustic Echo Cancellation)

Microphones in an AV room will naturally pick up a variety of sounds in that space. When a video conference call is active, the microphones can pick up and try to amplify the noise made by the loudspeakers in the same room, which may include speakers talking from a remote location. AEC is a digital process that prevents sounds from the video conferencing call from being transmitted by the audio system to the far end, prevent echoes, feedback and other unwanted acoustic anomalies.

AEC may be integrated into the Video Conferencing system for relatively simple rooms (such as AIO Soundbars) or provided by an external DSP for more complicated spaces.

Voice Lift

This describes the function of using a microphone located inside a space to amplify a speaker's voice within that space. This is generally achieved by using a wireless microphone located at the speaker (as they are wearing it or holding it to their mouth) or by using a microphone in a fixed location (e.g. a lectern microphone).

Acoustic Reverberation (Reverb)

This is the persistence of sound in a space after it is produced caused by reflectance of hard surfaces in the room. Every space will reverberate to some degree, however excessive reverb can have a detrimental impact on the sound of a space. This impact can include making sources such as loudspeakers sound less clear and precise as well as having a significant impact on the clarity of speech captured by microphones.

Reverb should generally be minimised through the use of acoustically absorbate surfaces such as soft finishes or dedicated absorptive panels.

Feedback

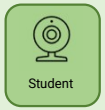
Acoustic feedback is the loud squealing noise that some sound systems make when a microphone is turned on. This is caused by the sound going into the microphone, being reproduced by a local loudspeaker and going back into the microphone again. This process results in the rapid increase in level and the unpleasant noise created by feedback.

Feedback can be managed by careful design of the audio system. Microphones that are used for Voice Lift should be carefully selected and positioned in such a way as to maximise the available amplification of the intended source (generally someone speaking) before the system feeds back on itself. These consideration generally make microphones that capture a large area (such as table top or ceiling microphones) unsuitable for voice lift functions.

Cameras

LTU rooms use cameras primarily to show what is happening inside the room to the remote participants in video conferencing sessions, while some rooms will use them as a source for Lecture Capture (via Echo 360). In most rooms the camera will be located under the display(s) and point back at the audience in the room. Some larger rooms will have additional cameras (that might be the main camera) pointing towards the front of the room to capture a presenter standing next to (or under) the room displays.

Equipment You Might Use

	**Student (or Meeting Room) Camera**	Student cameras typically point from the front (or side) wall of the spaces back at the seated audience. The cameras may take a variety of forms, however in larger spaces they are typically **PTZ Cameras** that can move to cover a large area of the room.
	**Presenter Camera**	Cameras pointing toward the front of the room and typically mounted to the opposite wall or ceiling. Cameras will typically have PTZ functionality and may use **auto framing** or **speaker tracking** to automatically ensure the camera is always pointing at the presenter, even if they walk around.
	**Camaras Integrated into Soundbars**	Smaller meeting rooms will use All-In-One (AIO) soundbars which will include a camera. These cameras typically have **auto framing** to change which part of the is presented to the video conferencing system.
	**Whiteboard Camera**	A specialist camera mounted above a physical whiteboard capturing the content drawn on it. This allows content drawn on a whiteboard to shared to a video conferencing call.

Camera Ideas To Understand

Selecting the Right Camera

Every camera has performance characteristics that should be kept in mind when selecting a solution for a room. Each camera has a given **field of view** that defines how wide of an angle it can capture in the room. Cameras also have a characteristic **focal length** which describes how far away target object should be. For some applications, these limitations may be overcome through the use functions such as **PTZ** (Pan – the ability to move side to side; Tilt – the ability to tilt up/down; Zoom – the ability to change the focal length and zoom of the camera).

Multi-focus framing

In an effort to present local participants equally with those attending remotely to meetings, some cameras will be capable of framing each local participant individually and placing them side by side.

Auto Framing

Many video cameras have quite wide fields of view which means they can capture much of the room. This can often result in participants appearing further away from the camera than they are, with features and gestures appearing indistinct. Auto-framing uses a combination of visual information (perhaps from another camera lens) and audio cues (from microphones) to automatically “frame up” the current activity in a room. This activity can be a single person talking, a small group, or the whole room depending on how many people are talking or moving around at a time.

Speaker Tracking

This is similar to auto-framing in many ways however it tends to relate to tracking a presenter or speaker who is further away from the camera. A camera with a longer focal length is used that physically moves (via Pan/Tilt) to maintain focus on a moving presenter. Many speaker tracking systems are cued to a location when a speaker talks into a microphone in a location. They may also use an additional fixed camera lens to track a moving presenter and cue the main PTZ to that location.

Design Guidelines

Learning Spaces

Room Design Guidelines

Interactive Displays for Teaching

An interactive touch screen display in an educational setting serves as a powerful tool for teaching and learning. Here are some key aspects of such displays:

Engagement: Interactive touch screens captivate students' attention by allowing them to actively participate in lessons. Whether it's drawing diagrams, solving problems, or exploring content, these displays encourage engagement.

Versatility: These displays combine the best of whiteboards and computers. Educators can write, draw, and annotate directly on the screen, making lessons dynamic and adaptable.

Visual Clarity: The high-resolution screens ensure that content is clear and legible, even from a distance. Whether displaying text, images, or videos, the visual impact is significant.

Collaboration: Interactive displays promote collaboration among students. They can work together on projects, share ideas, and collaborate seamlessly.

Multimedia Integration: Teachers can incorporate multimedia elements such as videos, interactive simulations, and educational apps. This enhances the learning experience and caters to different learning styles.

Efficiency: Interactive displays streamline administrative tasks. Teachers can save and share lesson materials, access online resources, and manage classroom activities efficiently.

Adaptability: These displays accommodate various teaching methods, from traditional lectures to group discussions. Educators can switch between modes effortlessly.

Feedback: Real-time feedback allows teachers to assess student understanding instantly. Polls, quizzes, and interactive exercises provide valuable insights.

Accessibility: Interactive displays are accessible to all students, including those with diverse learning needs. Features like text-to-speech and adjustable font sizes enhance inclusivity.

Cost-Effective: While the initial investment may seem significant, the long-term benefits in terms of improved learning outcomes and teacher efficiency make it a worthwhile investment.

Interactive Displays for Teaching

IDT_01_065_01

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is hung on a wall

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-100
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	65" inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Interactive Displays for Teaching

IDT_01_075_01

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is hung on a wall

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-120
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75" inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Interactive Displays for Teaching

IDT_01_086_01

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is hung on a wall

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-140
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86” inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Interactive Displays for Teaching

IDT_01_075_01m

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is mounted to a trolley allowing for relocation.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-100
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75" inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Interactive Displays for Teaching

IDT_01_086_01m

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is mounted to a trolley allowing for relocation.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-140
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86” inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Interactive Displays for Teaching

IDT_01_075_01f

General Description

The AV solution consists of a single touch interactive LCD display with integrated Room PC, wireless keyboard and mouse.

The display is mounted to a table allowing for use whilst flat.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	80-100
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	LCD Display
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75" inch
	Display Inputs	Room PC Laptop (HDMI/USBC
AUDIO	**Loudspeaker Type**	No
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	No
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	No
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	No
	Motion Sensor	No
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements

LA TROBE UNIVERSITY

Room Design Guidelines

Flat Floor Teaching Basic

Flat Floor Teaching Basic

FFB_40_01_PRJ_01

General Description

The AV solution consists of a single projected surface and front of house speakers.

A touch down point located within the space and houses the AV equipment a 24" display and the touch panel controller.

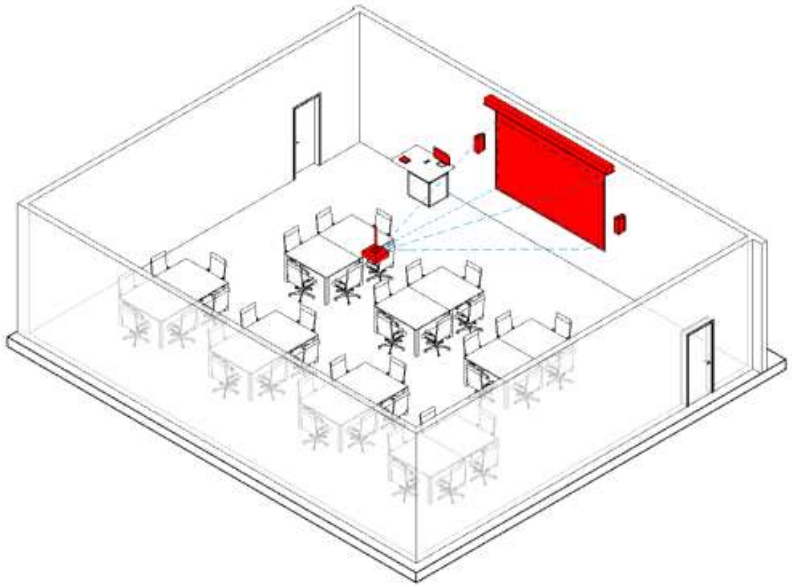
The PC is provided at the touch down point for content sharing. A HDMI/USBC cable is provided for Laptop content sharing.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	Up to 40
	Area in m2	100-120
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Single Projector
	Additional Displays	PC Monitor (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	Projector 100+inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Front of House
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Control Interface
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements



LA TROBE UNIVERSITY

Flat Floor Teaching Basic

FFB_60_01_PRJ_01

General Description

The AV solution consists of a single projected surface and front of house speakers.

A touch down point located within the space and houses the AV equipment a 24" display and the touch panel controller.

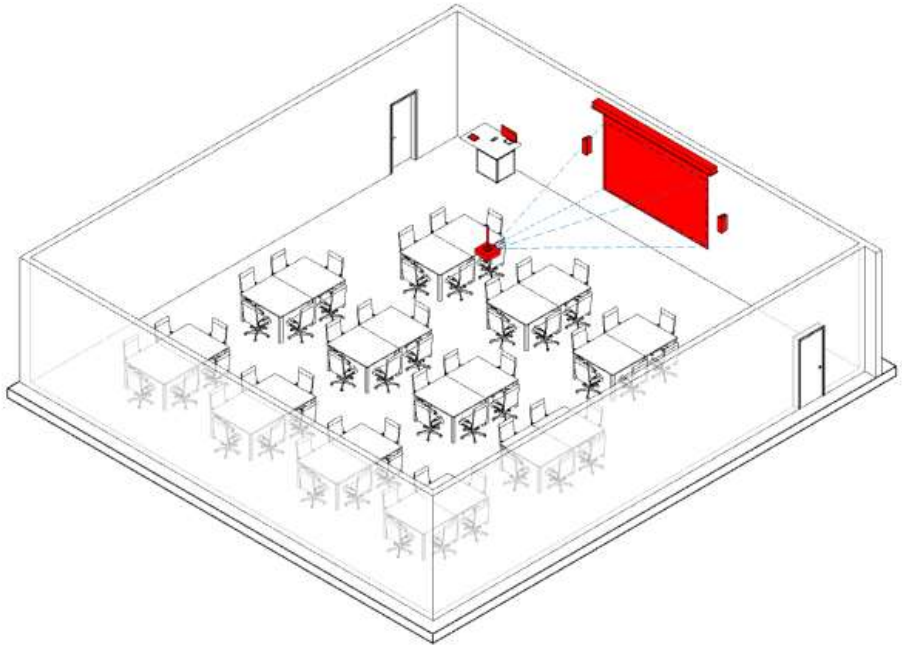
The PC is provided at the touch down point for content sharing. A HDMI/USBC cable is provided for Laptop content sharing.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	40 - 60
	Area in m2	120-160
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Single Projector
	Additional Displays	PC Monitor (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	Projector 100+inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Front of House
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Control Interface
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements



Flat Floor Teaching Basic

FFB_90_02_PRJ_01

General Description

The AV solution consists of dual projectors and front of house and ceiling speakers.

A touch down point located within the space and houses the AV equipment a 24" display and the touch panel controller.

The PC is provided at the touch down point for content sharing. A HDMI/USBC cable is provided for Laptop content sharing.

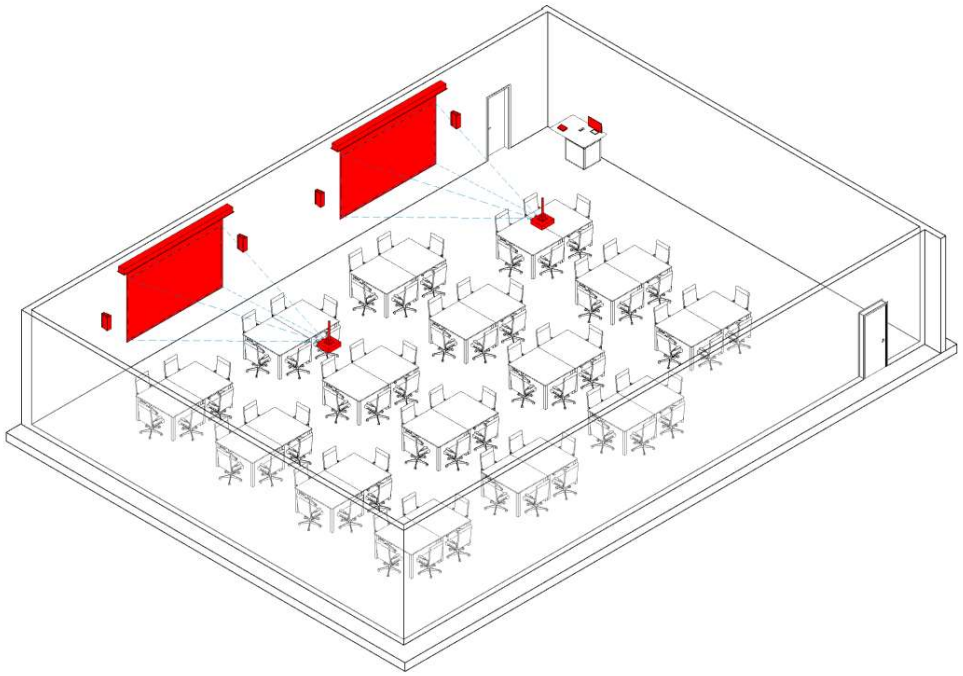
Lapel and Handheld microphones for voice lift.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	60 - 90
	Area in m2	180-240
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Projectors
	Additional Displays	PC Monitor (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	Dual Projectors 100+inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Front of House and Ceiling Mounted
	Conferencing Microphones	No
	Voice lift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Control Interface
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements



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Flat Floor Teaching Basic

FFB_60_02_098_01

General Description

The AV solution consists of dual LCDs, one on the front wall and one on the rear wall. front of house speakers.

A touch down point located within the space and houses the AV equipment a 24" display and the touch panel controller.

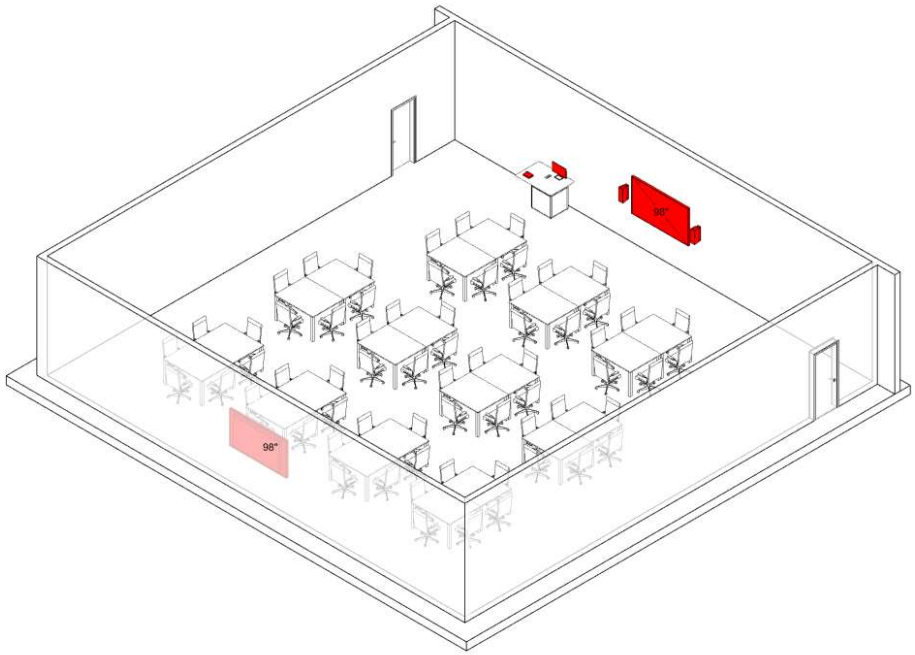
The PC is provided at the touch down point for content sharing. A HDMI/USBC cable is provided for Laptop content sharing.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Basic
	Seating Capacity	40-60
	Area in m2	130-150
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Flat Panels
	Additional Displays	PC Monitor (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	98 Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Front of House
	Conferencing Microphones	No
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Control Interface
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements



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Flat Floor Teaching Basic

FFB_90_04_086_01

General Description

The AV solution consists of multiple LCDs, spread around the room. front of house speakers and ceiling speakers.

A touch down point located within the space and houses the AV equipment a 24" display and the touch panel controller.

The PC is provided at the touch down point for content sharing. A HDMI/USBC cable is provided for Laptop content sharing.

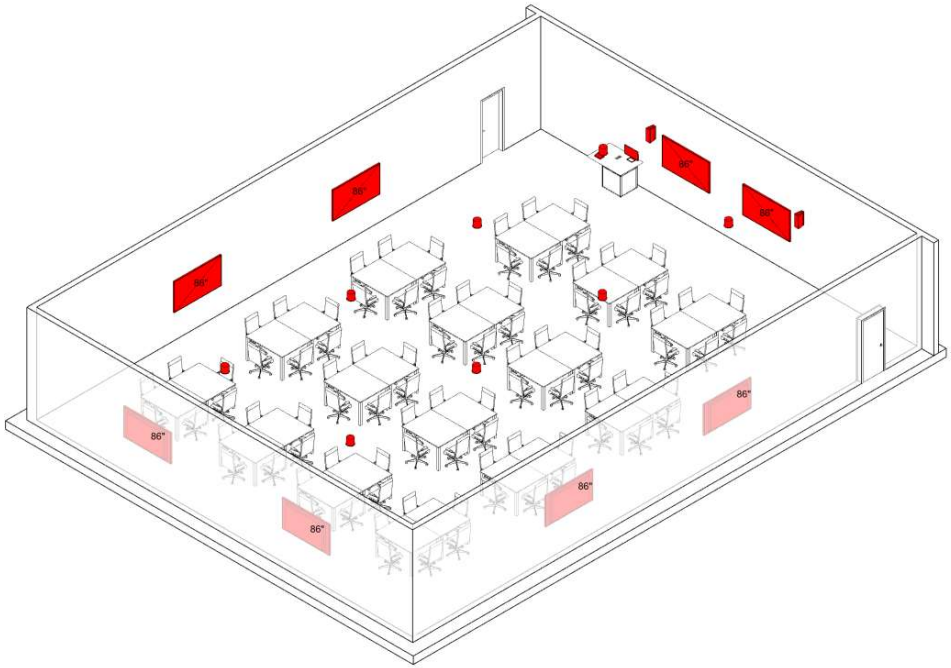
Lapel and Handheld microphones for voice lift.

The room will be fitted with writable surfaces.

The room is fitted with flexible tables and chairs.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching
	Seating Capacity	60-90
	Area in m2	180-240
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Multiple Flat Panel Displays
	Additional Displays	PC Monitor (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86 Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Front of House and Ceiling Mounted
	Conferencing Microphones	No
	Voice lift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	No
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Control Interface
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	No
	Lectern Microphone	No

Room Arrangements



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Room Design Guidelines

Flat Floor Teaching Hybrid

Hybrid teaching refers to a mode of instruction where educators simultaneously engage with both online and on-campus students in two separate learning environments. In other words, it’s like conducting a symphony where some students are physically present in the classroom, while others join remotely via video conferencing. This approach blends synchronous teaching methods, allowing seamless interaction between in-person and virtual participants.

Flat Floor Teaching Hybrid

FFH_40_02_PRJ-075_01

General Description

The AV solution consists of a projector and display at the front of the room.

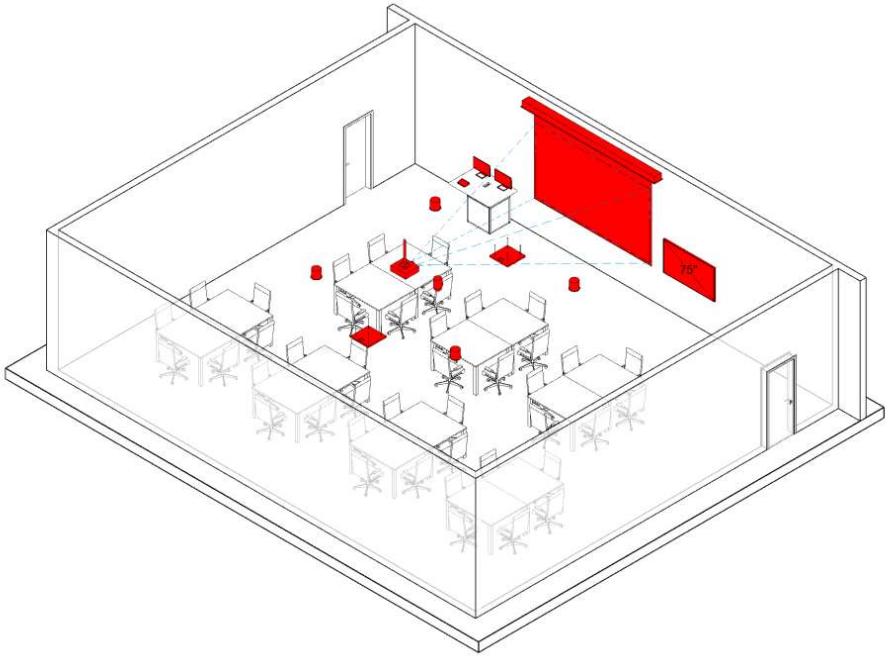
Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	Up to 40
	Area in m2	100-120
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Projector 75" Inch LCD – Online Participants
	Additional Displays	Dual Monitors (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75" Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 1
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No



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Flat Floor Teaching Hybrid

FFH_60_02_PRJ-086_01

General Description

The AV solution consists of a projector and display at the front of the room.

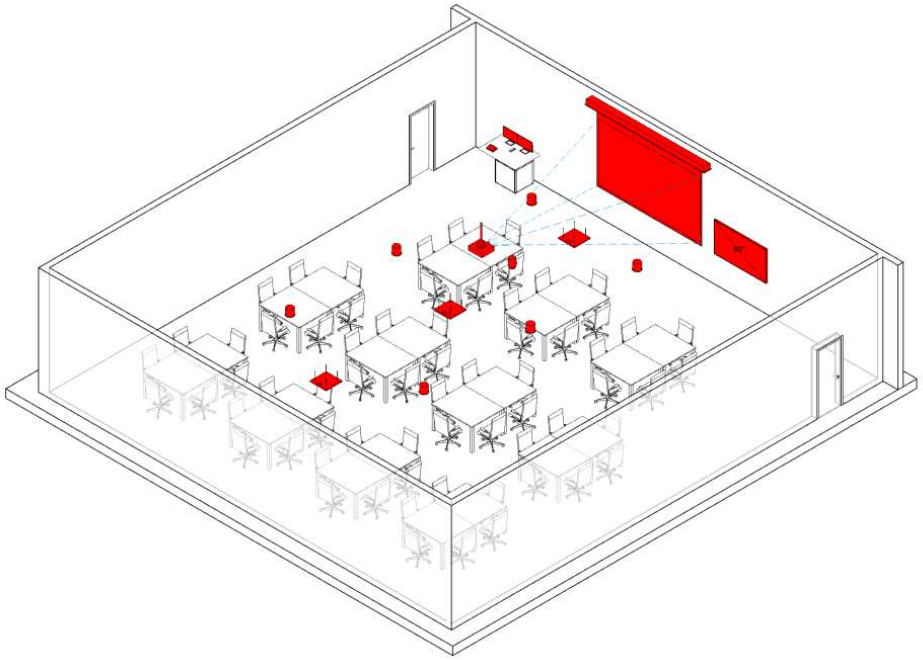
Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	Up to 40
	Area in m2	100-120
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Projector 86" Inch LCD – Online Participants
	Additional Displays	Dual Monitors (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86" Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 1
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No



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Flat Floor Teaching Hybrid

FFH_90_02_PRJ_01

General Description

The AV solution consists of dual projectors at the front of the room.

Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

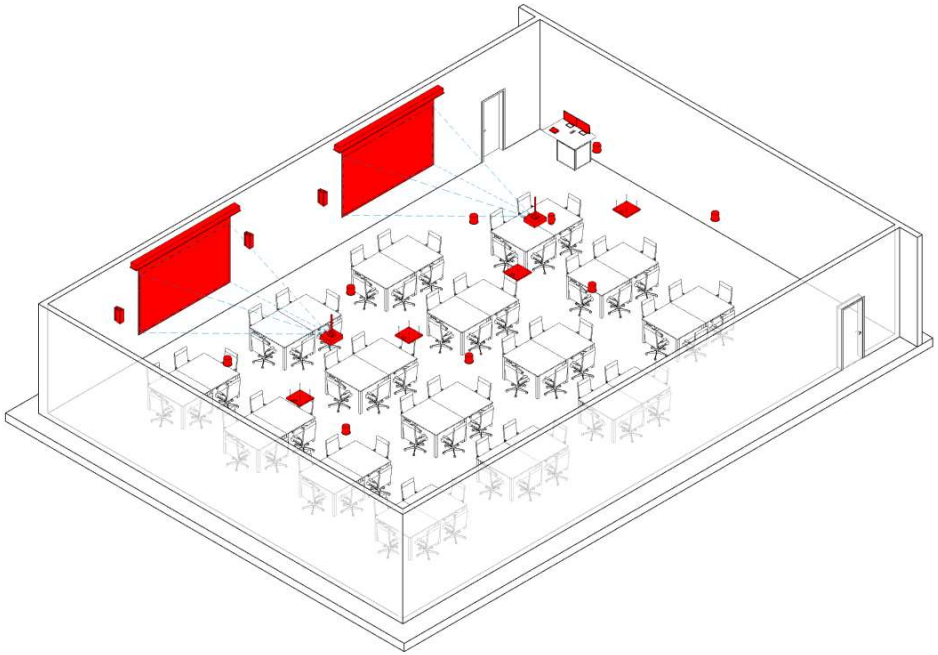
A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls.

A lapel and handheld Microsoft is provided for voice lift.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	Up to 90
	Area in m2	200-240
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Projectors (FOH)
	Additional Displays	Dual Monitors (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	>110" Inch (Projectors)
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 1
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	No
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No



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Flat Floor Teaching Hybrid

FFH_40_04_075_01

General Description

The AV solution consists of dual displays at each end of the room.

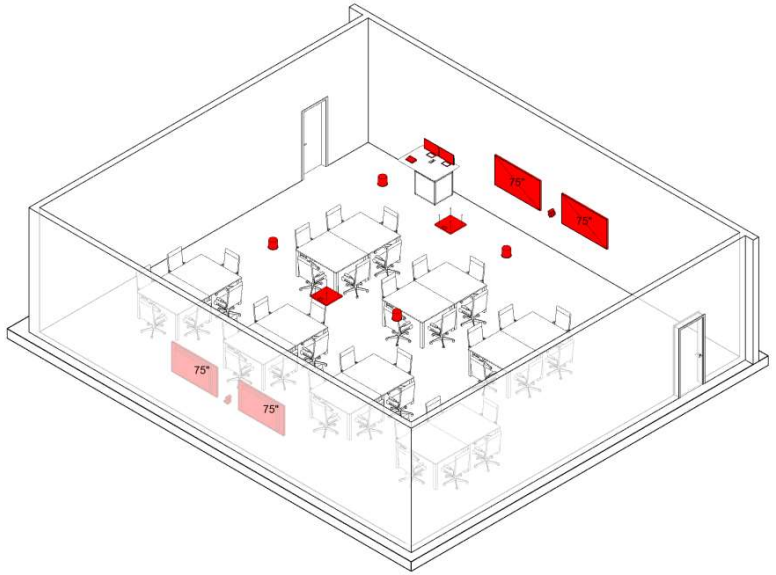
Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls,.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	Up to 36
	Area in m2	100-120
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Flat Panel (2 Sets)
	Additional Displays	Dual Monitors (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75 Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 2
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No



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Flat Floor Teaching Hybrid

FFH_60_04_086_01

General Description

The AV solution consists of dual displays at each end of the room.

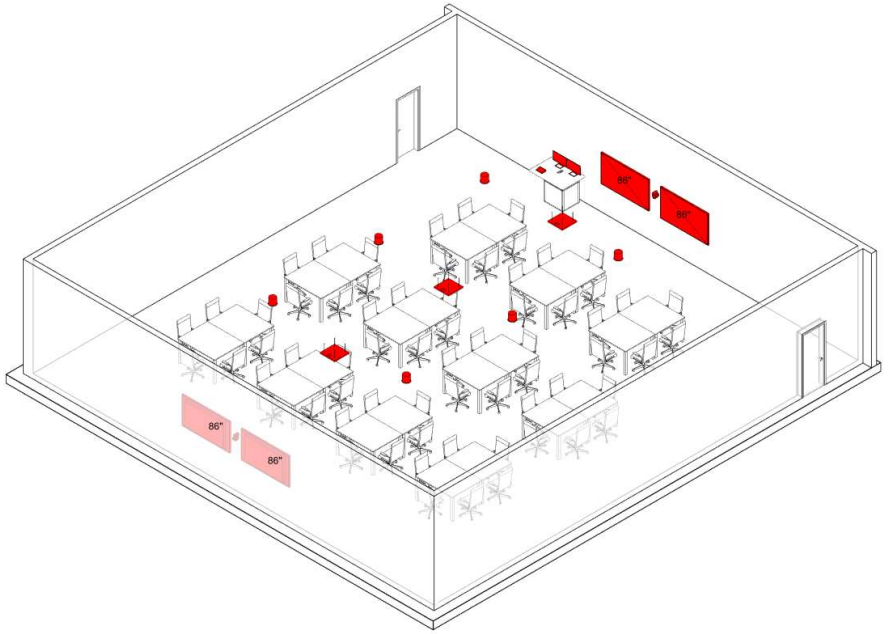
Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls,.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	40-60
	Area in m2	130-150
	Custom Configuration Available	No
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Flat Panel (2 Sets)
	Additional Displays	Dual Monitors (Teacher's Station)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86 Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 2
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No



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Flat Floor Teaching Hybrid

FFH_90_12_086_01

General Description

The AV solution consists of multiple displays around the room.

Zoom is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones coverage allows participants in the room to talk to participants on who are connected via Zoom from anywhere in the room. Ceiling mounted loudspeakers are installed throughout the room allowing for participants in the room to hear participants who are connected via Zoom and program audio.

A room PC is provided at the teacher's station for content sharing. A touch panel controller is located at the teacher station for AV system control and to control Zoom calls,.

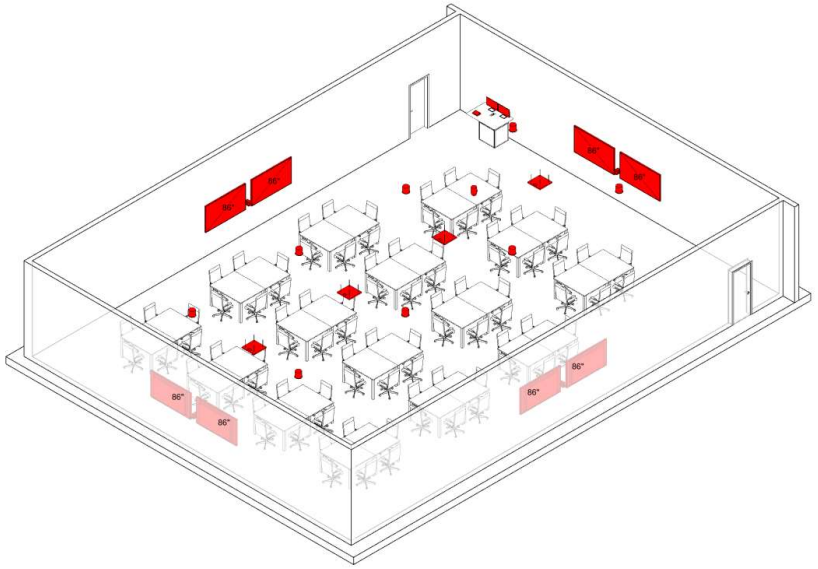
A lapel and handheld Microsoft is provided for voice lift.

The room will be fitted with writable surfaces.

The room will be fitted with flexible furniture.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching Hybrid
	Seating Capacity	90 to 110
	Area in m2	200-240
	Custom Configuration Available	Yes
	Table Style	Flexible, Movable Tables
DISPLAY	**Main Display**	Dual Flat Panel (Multiple Sets)
	Additional Displays	No
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86 Inch
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voice lift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 4
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	Touch Panel at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No

Room Arrangements



LA TROBE UNIVERSITY

Room Design Guidelines

Flat Floor Teaching TEAL

A TEAL classroom incorporates and blends together lectures, recitations, and an interactive learning environment. This learning format combines educational content from a lecturer, simulation, and learners' experiences using technological solutions to provide a rich collaborative learning experience for students.

TEAL is used to provide academic and professional development that incorporates innovation into the learning experience by leveraging technology, pedagogy, and classroom design.

Typically, educators deliver short lectures interspersed with topical questions, visualizations on various subjects, and pencil-and-paper exercises. Learners use animated simulations designed to help them visualize concepts and carry out experiments during class.

Educators periodically ask questions, which students may discuss and answer. Educators no longer need to lecture from a fixed location but walk around talking to students about their work, assessing their understanding, facilitating interaction, and promoting learning. TEAL ensures enhanced development of the student's knowledge and skills to produce workplace-ready professionals.

Flat Floor Teaching TEAL

FFT_40_4_075_01

General Description

The AV solution consists of dual displays mounted opposite each other on one set of walls. Ceiling mounted loudspeakers are installed throughout the room allowing for every person to hear playback content or conferencing audio.

Zoom functionality is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones allow participants to talk to participants on the far end from anywhere in the room.

Additional AV systems comprising a display are provided adjacent to each of 4 breakout tables to enable small group working via shared content, connected via a local HDMI cable. The input from the small groups shall be available to main displays for larger group working.

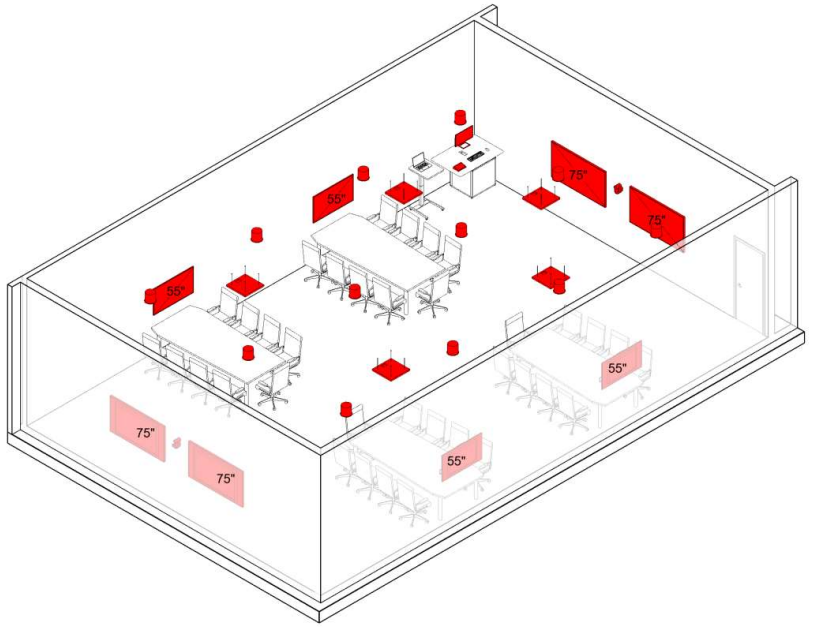
A room PC is provided at the teacher's station, along with an HDMI for BYOD, a touch panel controller and a USB port for the teacher's headset.

The display automatically powers on when detecting a device has been plugged into HDMI. The displays automatically power down after a timeout period.

The room will be fitted with writable surfaces.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching
	Seating Capacity	Up to 36
	Area in m2	100-120
	Custom Configuration Available	No
	Table Style	Fixed Tables
DISPLAY	**Main Display**	Dual Flat Panel (2 Sets) Additional displays for group work
	Additional Displays	Small group displays (4 sets)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	75 Inch (Main) 55 Inch (Small Group tables)
	Display Inputs	Room PC Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voicelift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 2
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	TPC at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No

Room Arrangements



LA TROBE UNIVERSITY

Flat Floor Teaching TEAL

FFT_60_4_086_01

General Description

The AV solution consists of dual displays mounted opposite each other on one set of walls. One of the main displays shall provide touch interactivity to allow interaction with presentation content.

Ceiling mounted loudspeakers are installed throughout the room allowing for every person to hear playback content or conferencing audio.

Zoom functionality is installed in the room, allowing for conferencing without additional equipment. Ceiling mounted microphones allow participants to talk to participants on the far end from anywhere in the room.

Additional AV systems comprising a display are provided adjacent to each of 4 breakout tables to enable small group working.

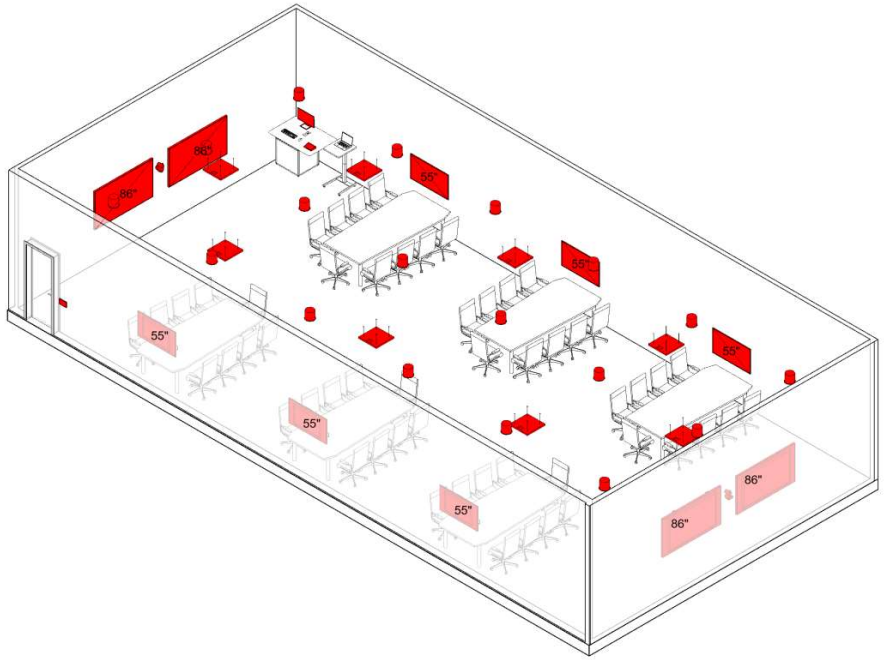
A room PC is provided at the teacher's station, along with an HDMI for BYOD, a touch panel controller and a USB port for the teacher's headset.

The display automatically powers on when detecting a device has been plugged into HDMI. The displays automatically power down after a timeout period.

The room will be fitted with writable surfaces.

ROOM SPECIFICATION	**General Room Type**	Flat Floor Teaching
	Seating Capacity	40 to 60
	Area in m2	160-200
	Custom Configuration Available	No
	Table Style	Fixed Tables
DISPLAY	**Main Display**	Dual Flat Panel (2 Sets) Additional displays for group work
	Additional Displays	Small group displays (6-8 sets)
	Confidence Monitor	No
	Relay Displays	No
	Screen Size	86 Inch (Main) 55 Inch (Small Group tables)
	Display Inputs	Room PC Zoom Web Conferencing Laptop (HDMI)
AUDIO	**Loudspeaker Type**	Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voicelift	No
	Wireless Microphones	No
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Tracking PTZ x 2
	Other Camera Options	No
	Additional Options	No
CONTROL	**Controller**	TPC at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes via Zoom
	Lectern Microphone	No

Room Arrangements



LA TROBE UNIVERSITY

Room Design Guidelines

Learning Spaces Lecture Theatre

Lecture Theatre Hybrid

LTH_300_02_PRJ-065_01

General Description

The AV solution consists of multiple projectors mounted to the ceiling with the images projected onto the front wall. The screen content is duplicated, rather than different content on each screen.

Additional smaller flat panels are provided off the sides which can display far-end zoom participants. Relay and confidence display monitors are mounted to the ceiling. The room walls will be fitted with writable surfaces.

Ceiling mounted speakers and microphones are situated throughout the room. An integrated Zoom conferencing system is provided as part of room equipment

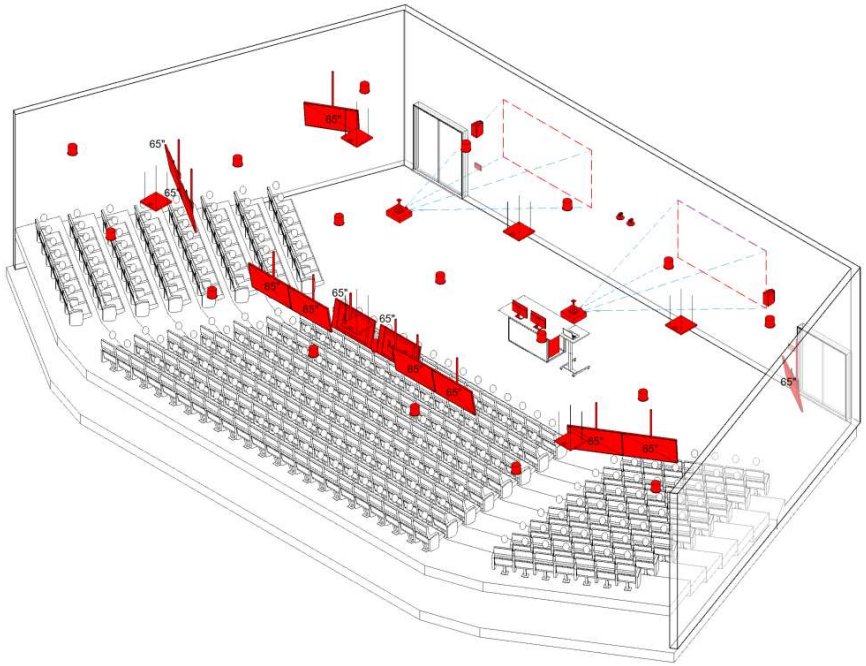
A wireless microphone system is provided for the lecturer as well as a lectern microphone, enabling voice lift within the room. PTZ web conferencing cameras are mounted to the front wall between the screens to capture the students as well as an additional ceiling mounted PTZ camera to capture the presenter.

A HDMI cable is recessed in a box embedded in the lectern for content sharing. Additionally, a USBC cable is provided for BYOD mode, BYOD mode allows for the use of a laptop and any software to control the speakers, microphones and webcams.

A Touch Panel Controller is situated at the lectern for AV and conference control along with a USB port for the teacher's headset. The projectors automatically power on when detecting the touch panel controller or when a device has been plugged into HDMI. The projectors automatically power down after a timeout period. A room scheduling panel is located at the entrance.

ROOM SPECIFICATION	**General Room Type**	Raked Lecture Theatre
	Seating Capacity	60 to 300+
	Area in m2	100 to 500
	Custom Configuration Available	Yes
	Furniture Style	Fixed
DISPLAY	**Main Display**	Dual Projectors (on plasterboard)
	Additional Displays	Side Displays for Zoom Far End
	Confidence Monitor	Yes (dual displays)
	Relay Displays	Yes (multiple pairs)
	Screen Size	Approx 150" Main Display Approx. 65" Additional Flat Panels
	Display Inputs	Room PC Zoom Web Conferencing Laptop (HDMI)
AUDIO	**Loudspeaker Type**	FOH Loudspeakers Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voicelift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Main Tracking Camera x 1
	Other Camera Options	Dual Audience Cameras
	Additional Options	Additional Tracking Camera
CONTROL	**Controller**	TPC at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes
	Lectern Microphone	Option

Room Arrangements



LA TROBE UNIVERSITY

Lecture Theatre Hybrid

LTH_110_02_PRJ-065_01

General Description

The AV solution consists of multiple projectors mounted to the ceiling with the images projected onto the front wall. The screen content is duplicated, rather than different content on each screen.

Additional smaller flat panels are provided off the sides which can display far-end zoom participants. Relay and confidence display monitors are mounted to the ceiling. The room walls will be fitted with writable surfaces.

Ceiling mounted speakers and microphones are situated throughout the room. An integrated Zoom conferencing system is provided as part of room equipment

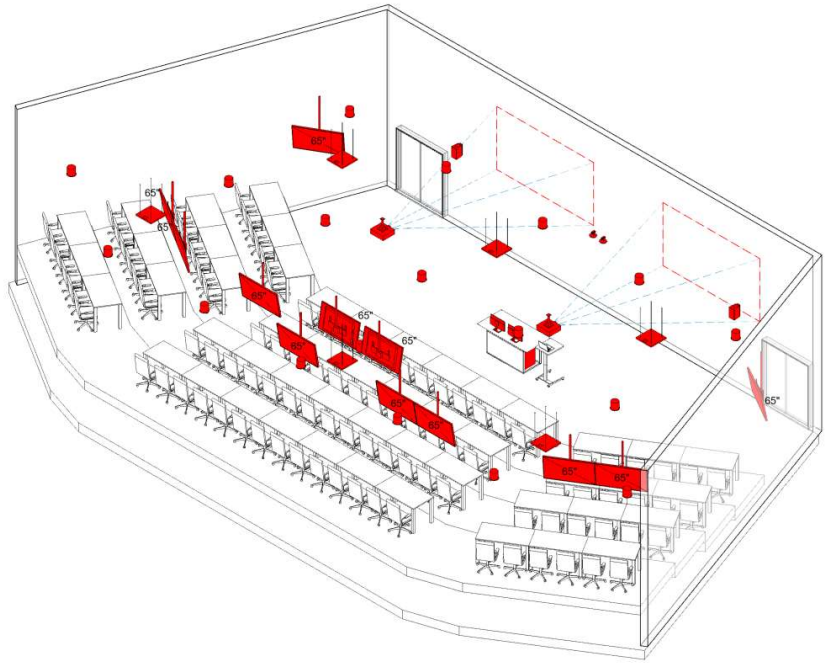
A wireless microphone system is provided for the lecturer as well as a lectern microphone, enabling voice lift within the room. PTZ web conferencing cameras are mounted to the front wall between the screens to capture the students as well as an additional ceiling mounted PTZ camera to capture the presenter.

A HDMI cable is recessed in a box embedded in the lectern for content sharing. Additionally, a USBC cable is provided for BYOD mode, BYOD mode allows for the use of a laptop and any software to control the speakers, microphones and webcams.

A Touch Panel Controller is situated at the lectern for AV and conference control along with a USB port for the teacher's headset. The projectors automatically power on when detecting the touch panel controller or when a device has been plugged into HDMI. The projectors automatically power down after a timeout period. A room scheduling panel is located at the entrance.

ROOM SPECIFICATION	**General Room Type**	Raked Lecture Theatre with Bench Seating
	Seating Capacity	60 to 100
	Area in m2	100 to 500
	Custom Configuration Available	Yes
	Furniture Style	Fixed
DISPLAY	**Main Display**	Dual Projectors (on plasterboard)
	Additional Displays	Side Displays for Zoom Far End
	Confidence Monitor	Yes (dual displays)
	Relay Displays	Yes (multiple pairs)
	Screen Size	Approx 150" Main Display Approx. 65" Additional Flat Panels
	Display Inputs	Room PC Zoom Web Conferencing Laptop (HDMI)
AUDIO	**Loudspeaker Type**	FOH Loudspeakers Ceiling Mounted
	Conferencing Microphones	Ceiling Mounted
	Voicelift	Yes
	Wireless Microphones	Yes
	Hearing Augmentation	IR Transmitter / Receivers
CAMERA	**Conferencing Camera**	Main Tracking Camera x 1
	Other Camera Options	Dual Audience Cameras
	Additional Options	Additional Tracking Camera
CONTROL	**Controller**	TPC at Teacher Station
	Room Booking Panel	Yes
	BYOD Conferencing	No
	Remote Monitoring	Yes
	Motion Sensor	Yes
	Lecture Recording	Yes
	Lectern Microphone	Option

Room Arrangements



LA TROBE UNIVERSITY

Room Design Guidelines

Audio Only

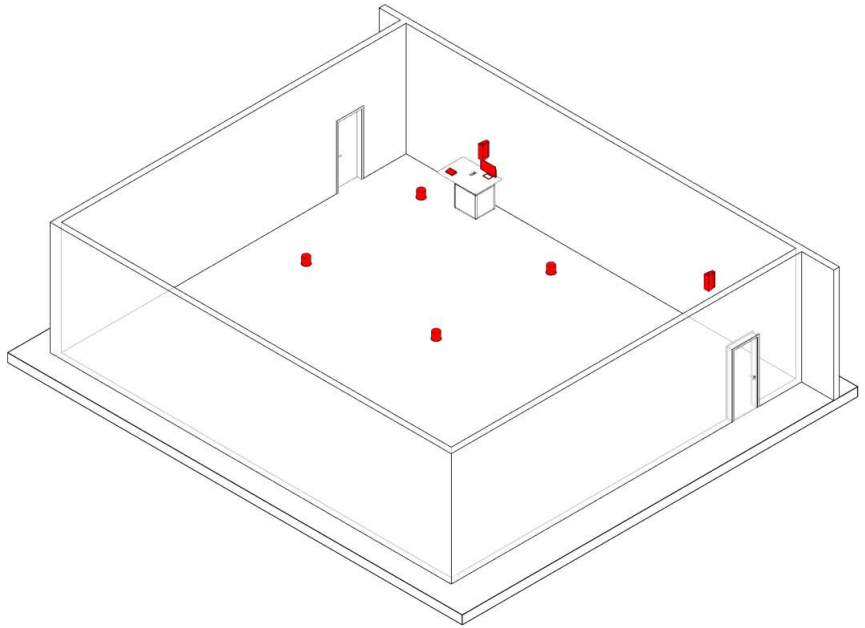
Audio Only

AO_04_CUS_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

Room Design Guidelines

Digital Signage

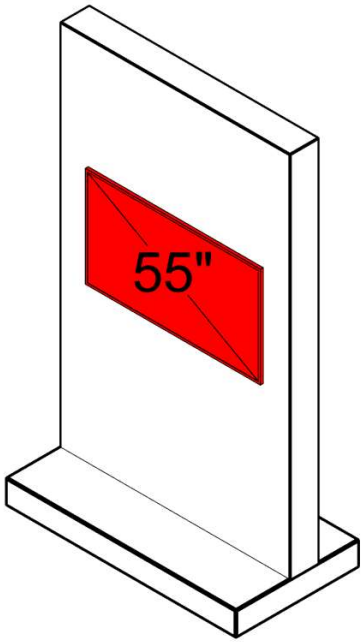
Digital Signage

DS_01_055_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

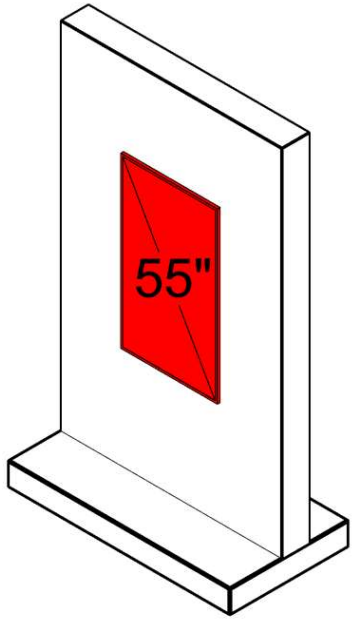
Digital Signage

DS_01_055_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

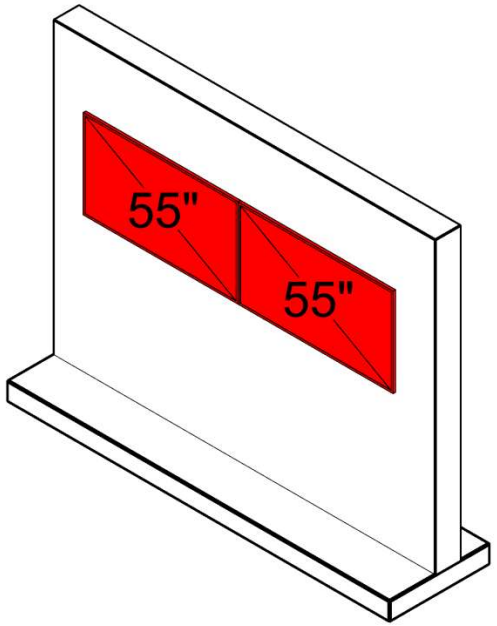
Digital Signage

DS_02_055_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

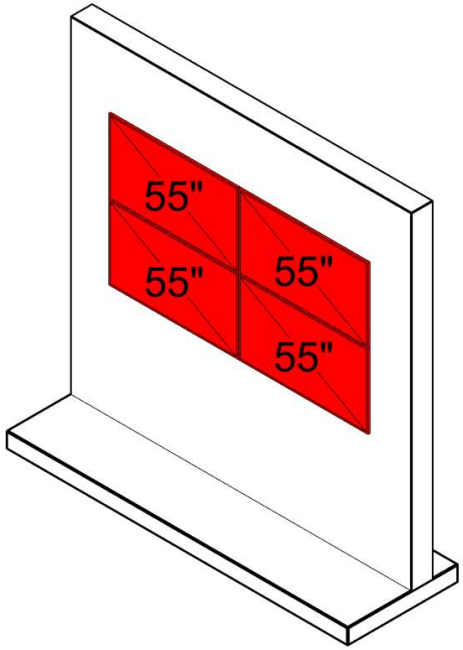
Digital Signage

DS_04_055_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

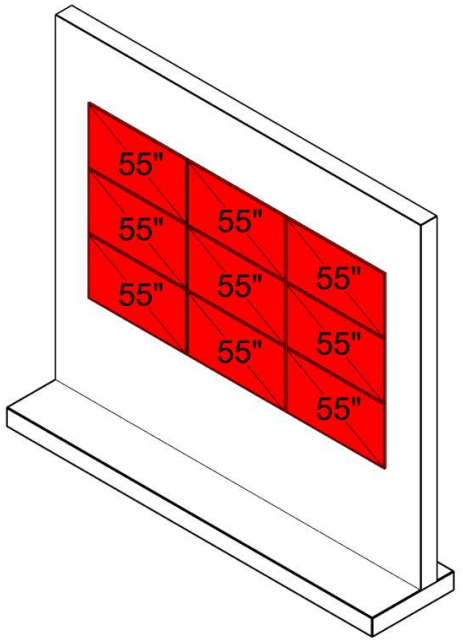
Digital Signage

DS_09_055_01

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

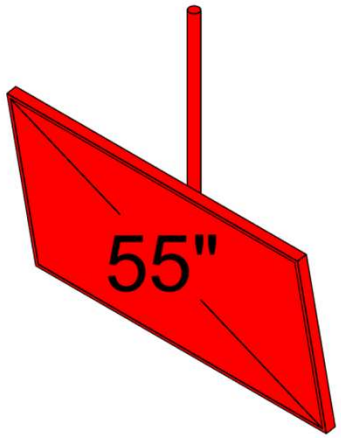
Digital Signage

DS_01_055_02

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

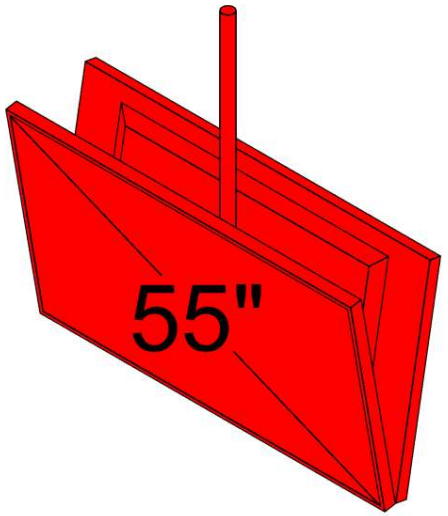
Digital Signage

DS_02_055_02

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

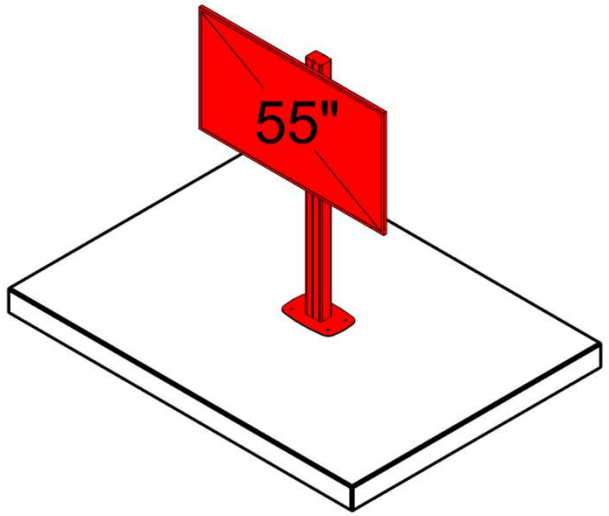
Digital Signage

DS_01_055_03

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



LA TROBE UNIVERSITY

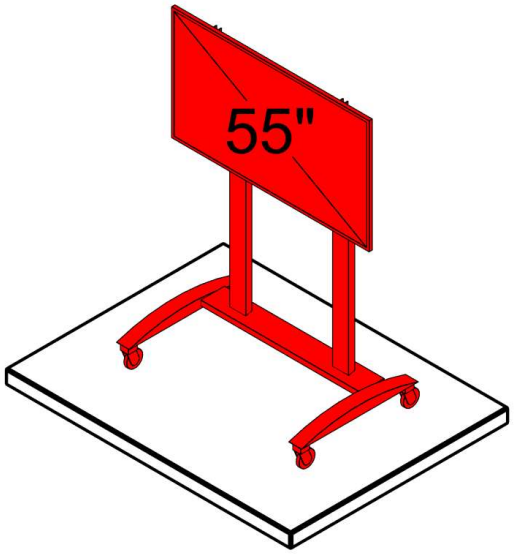
Digital Signage

DS_01_055_04

General Description

ROOM SPECIFICATION	General Room Type
	Seating Capacity
	Area in m2
	Custom Configuration Available
	Furniture Style
DISPLAY	Main Display
	Additional Displays
	Confidence Monitor
	Relay Displays
	Screen Size
	Display Inputs
AUDIO	Loudspeaker Type
	Conferencing Microphones
	Voice lift
	Wireless Microphones
	Hearing Augmentation
CAMERA	Conferencing Camera
	Other Camera Options
	Additional Options
CONTROL	Controller
	Room Booking Panel
	BYOD Conferencing
	Remote Monitoring
	Motion Sensor
	Lecture Recording
	Lectern Microphone

Room Arrangements



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