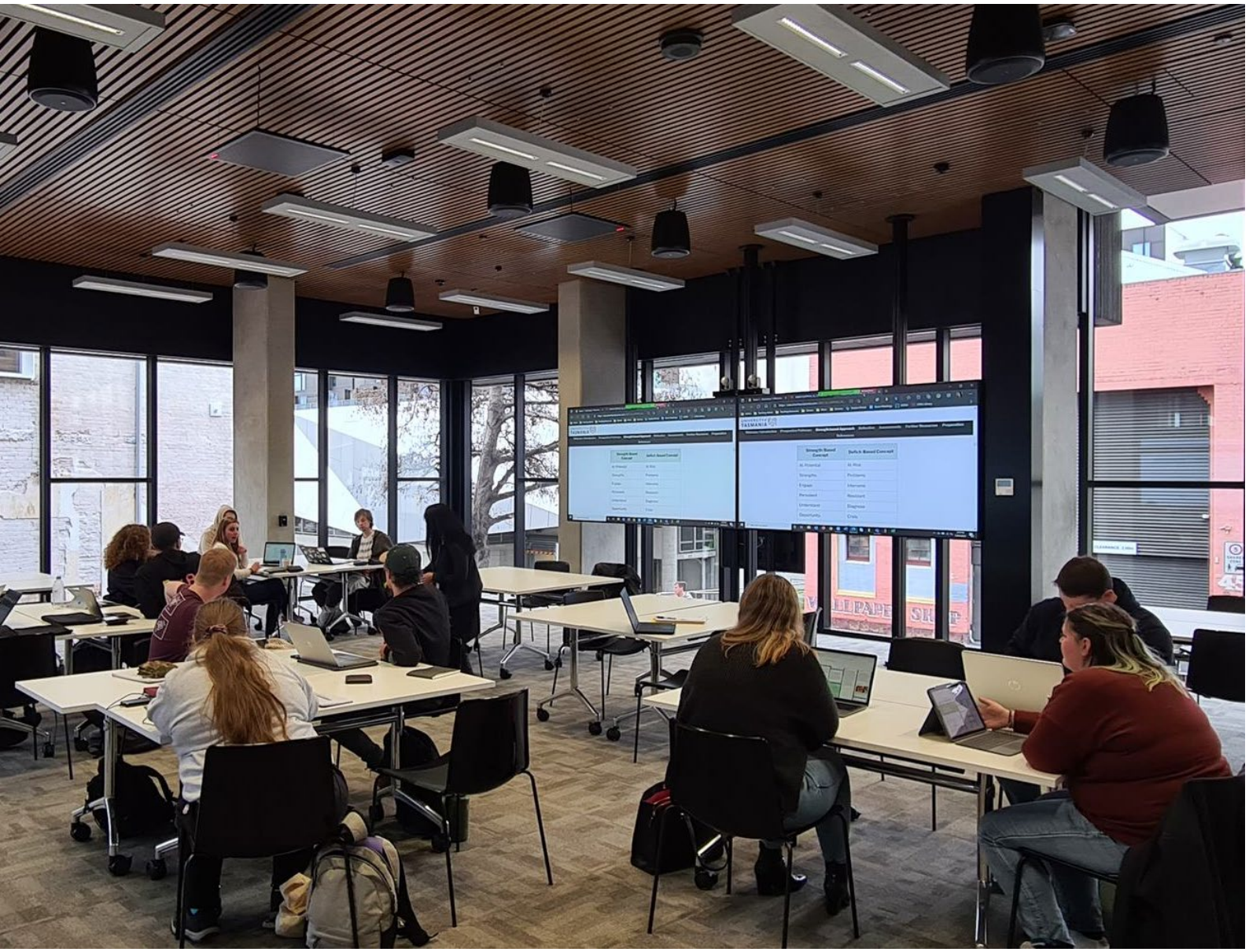
Audio-Visual Solutions for Teaching Spaces 2022 Edition

Developed by IT Services for the Academic Division



UNIVERSITY of TASMANIA

A Consistent and Seamless Experience

University teaching spaces range from basic AV only rooms, to high-tech video conference enabled spaces for cross-campus teaching and spaces pursuing a new age teaching pedagogy.

All new and renovated centrally managed teaching spaces must comply with the University Audio Visual Standards, and to ensure a consistent student experience and alignment with pedagogy, as recommended by the Academic Division.

Locally managed spaces should also follow these standards

Please note:

- All bundles account for approx. cost of technology and are subject to change dependant on specific requirements and market availability
- Estimated costs do not include construction/refurbishment or furnishing costs unless otherwise specified
- Equipment is designed as an integrated solution and as such have been strategically bundled together
- Components not purchased together may impact what is technically achievable for a teaching space
- Components such as acoustics, lighting, and furniture affect the overall technology performance

All technology and room types are designed are in accordance with the University Audio Visual and Networking Standards (http://www.utas.edu.au/it/communication-technologies/standards).

This Catalogue is endorsed and approved by the Deputy Vice-Chancellor Education.

This document is an approved guide for assisting the choice and selection of Teaching and Learning Space solutions.

Documentation including a schematic design and bill of materials needs to be created for any new room, this takes into consideration the room size, desired technology, and pedagogy.

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Built Environment and Pedagogy

The built environment of a classroom communicates its educative possibilities as well as underlying pedagogy. The built environment is both enabler of *and* inhibitor to learning and teaching effectiveness, depending on the requirements. Therefore, consideration of key principles in educational architecture, and key elements to be designed into the built classroom, are essential to ensure that audio-visual solutions enable pedagogical goals, rather than inhibit them.

To select or design an audio-visual space conducive to student learning, first identify and evaluate the pedagogical approaches that are desirable and can be enabled by the built environment. The questions listed below can be used to guide decision-making. They may not be relevant to a specific room and some classroom features may not be useful for specific pedagogical approaches.

Flexibility of space

Physical flexibility means understanding how the space can be available for multiple purposes and pedagogical approaches, supporting different forms of student learning[1]. This may include:

- Fluidity – how do individuals, sight, sound, and air flow through the room?
- Versatility – how can the space best enable multiple uses?
- Convertibility – how can the space be easily adapted for new uses?
- Scalability – how does the space enable learning with both small and large student numbers?
- Modifiability – how does the space enable active manipulation for innovative pedagogy?

Enabler of interactions (collaboration)

The design of space should be an enabler of teacher to student and student to student interactions. The degree to which, and the type of, collaboration desired will depend on the pedagogies that educators wish to enact in the space[2]. This may include:

- Openness –does the space feel transparent and inviting?
- Peer collegiality – how can the space foster inter-student engagement?
- Instructional collegiality – how can the space enable student-teacher engagement?

[1] Monahan, T. (2002). Flexible space & built pedagogy: Emerging IT embodiments. *Inventio, 4*(1), 1-19.

[2] Sturm, S., & Turner, S. (2011). "Built Pedagogy": The University of Auckland Business School as Crystal Palace. *Interstices: Journal of Architecture and Related Arts*.

Summary of Features

Key Features	RTS01 - HighFlex Space	RTS02 – Simple AV Teaching Space	RTS03 - Collaborative Space	TS10 – Lecture Theatre
Budget estimate	Starting at $50k	$20K-$30K	$100K-$300K	$200K-$250K
Room control	Touch Panel (Zoom)	Keypad	Touch Panel (Zoom)	Touch Panel (Crestron)
House PC with touch monitor	✕ (BYOD only)	O	✕ (BYOD only)	✓
Interactive touch display (room presentation screen)	✓	O	✓	✕
Room speakers	✓	✓	✓	✓
Hearing augmentation	✓	✓	✓	✓
Recording	✓ (User Initiated Zoom Recording)	✓ (User Initiated Echo360 Software Recording)	✓ (User Initiated Zoom Recording)	✓ (Scheduled Echo360 Recorder)
UTAS Adjustable height lectern	✓	O	✓	✓
Additional screens	O	O	O	O
Timetable tablet	✓	✓	✓	✓
Proxy card door swipe	✓	O	✓	✓
Wireless presentation	✓	✓	✓	✓
Support phone	✓	✓	✓	✓
Video Conferencing	✓ (Zoom)	✕	✓ (Zoom)	O (Zoom)
Integrated light and blind control	✕	✕	✕	✓
Zoom digital whiteboard	✓	✕	✓	✕
Whiteboard capture camera	O	✕	O	✕
Document camera	O	✕	✓	✓
Collaboration Pods	✕	✕	✓	✕

Note: all pricing is estimate only and is subject to change

Included (mandatory)	✓
Excluded (not compatible)	✕
optional	O

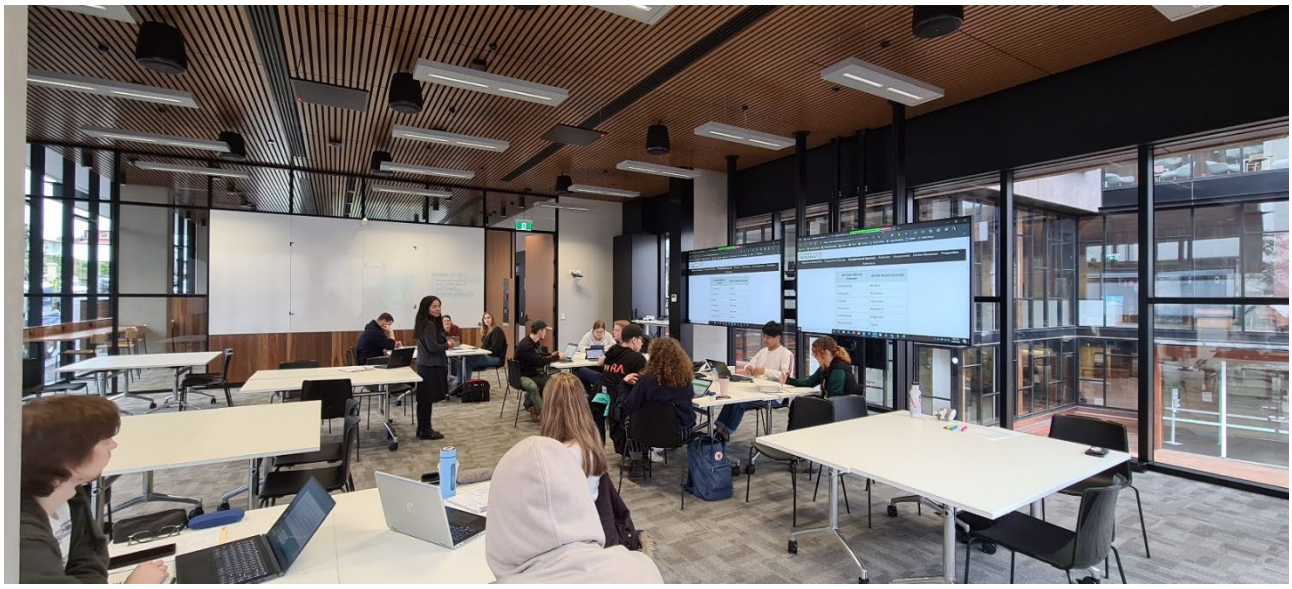
RTS01 - HighFlex Space

Pedagogy Statement

As the default teaching space, the RTS01 is designed to be a highly flexible space enabling integration of in-room and off-site students in a synchronous class. Students outside the room connect individually via Zoom and a visualisation of these students is provided to the in-room students and to the teacher via screens at the front and rear of the room, respectively. Teacher and students can also monitor chat on the main screens. The increased visibility of off-site students allows for a more equitable participation by all students relative to traditional video-conference arrangements (noting that the relative sizes of the in-room and offsite cohorts will impact the dynamics of the class and care must be taken to balance teacher attention).

Instructional pedagogies and demonstrations are facilitated by the technology. The room and technology configurations also support in-room collaboration and collaboration between off-site students. Limited collaboration between in-room and off-site students is possible. Effective learning activities need to be planned with the relative functionalities of the two spaces (in-room and off-site) in mind.

Zoom is currently not an appropriate technology in a computer lab



AV Function

This HighFlex new default teaching space design suits any flat floor space: small, medium, or large. The design allows the presenter/teacher to see their remote audience and in room audience. To cover larger spaces, multiple pairs of screens can be installed in the room and additional microphones and speakers can be installed. A 3-screen room variation is also an option for improved engagement for a remote audience.

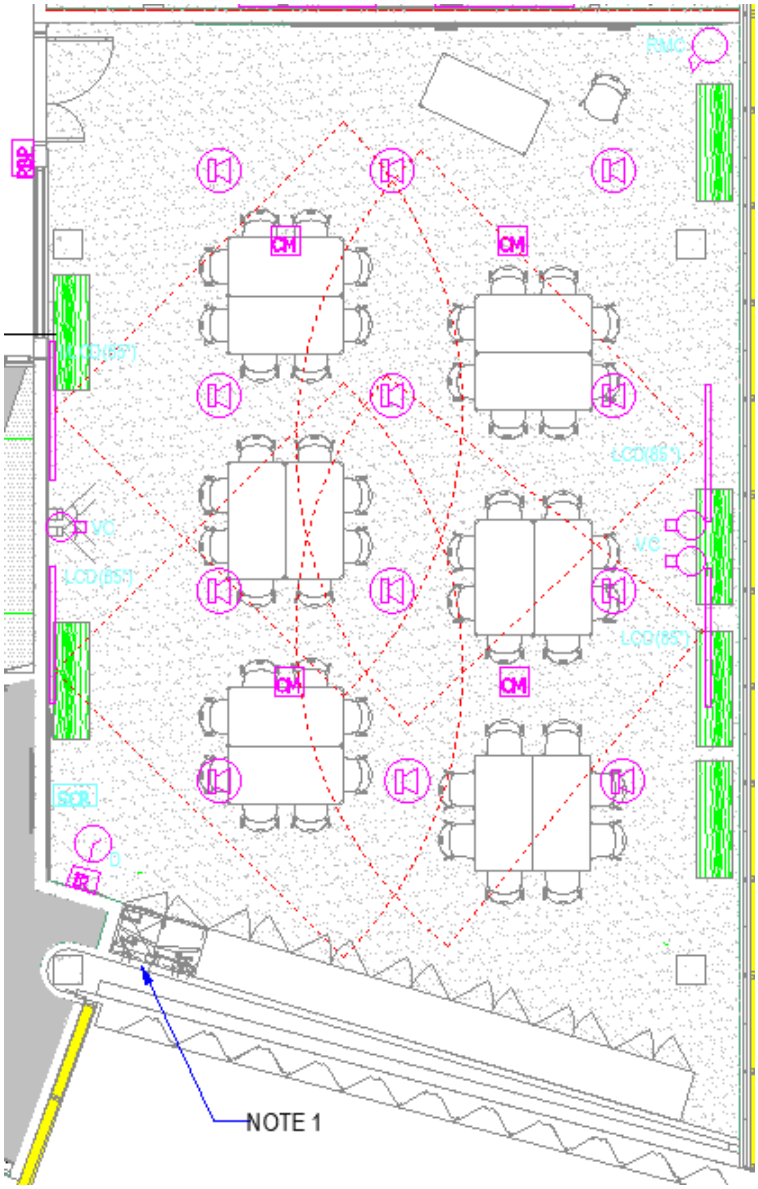
This room design is suited to LCD screens in flat floor spaces only. Multiple cameras can be added or arranged to suit many purposes including presenter facing, student facing or live demonstration facing.

Key Features (included):	**Optional Extras:**	**Exclusions (incompatible):**
• Touch Panel Control System • Dual Front Screens • In Room Microphones • Adjustable cameras	• Proxy Card Door Swipe • Tracking Camera • Companion Digital Whiteboard	• Echo360 Lecture Capture • Integrated Light and Blind Control • Projectors

• Wireless Presentation • Premium Room Audio • Hearing Augmentation • Adjustable Height Lectern	• Document Camera • Additional Screens • Whiteboard Capture Camera	• House PC with Touch Monitor

Similar Rooms: • SandyBay.SocialScience.213 • Hobart.KPMG.G01 / G02 / G06	**Budget Range:** • Starting at $50k, cost increases based on room size

Sample Room Floor Plan



RTS02 – Simple AV Teaching Space (No Zoom)

Pedagogy Statement

The RTS02 is designed for in-room teaching only. The technology provided in RTS02 enables instructional pedagogy and teacher-to-student delivery. Depending on room configuration, other approaches including inquiry-based learning and peer teaching on practical tasks, and collaborative and small-group activities that do not require additional technological support or a zoom connection, are also possible in this setting.

This is the recommended solution for providing AV capabilities to a specialised space such as chemistry and computer labs.

Note: furniture pictured is flexible, and currently shown in a COVID19 safe layout.

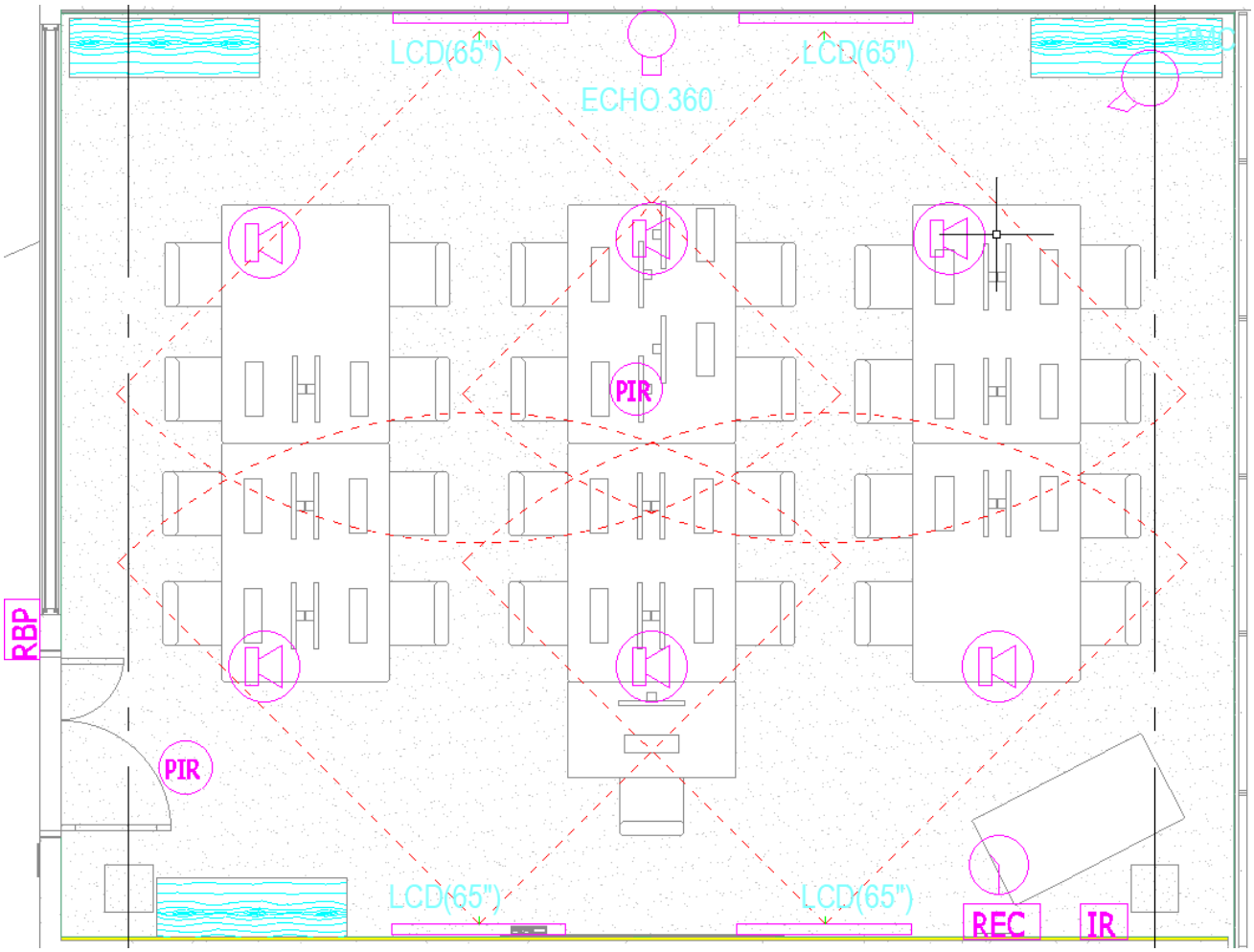
AV Function

Ideal for simple AV implementations and small teaching spaces or computer labs. Lower on the price scale, while still maintaining standard screen sizes. Suitable room speakers to provide premium audio with options to add one or multiple repeater screens as well as bring your own device input options.

Key Features (included):	**Optional Extras:**	**Exclusions (incompatible):**
• Keypad Control System • House PC with Touch Monitor • Room Speakers • Hearing Augmentation • Wireless Presentation • Software Lecture Capture • Timetable tablet • Support Phone	• Adjustable Height Lectern • Interactive Touch Display • Document Camera • Additional Presentation Screens • Proxy Card Door Swipe • Mobile or Free-Standing install	• Hardware Echo360 Recording • Separate images on screens • Integrated Light and Blind Control • Video Conference (inc. Zoom)

Similar Rooms:	**Budget Range:**
• Hobart.KPMG.LG01 • Centenary PC Games Lab	• $20K-30K

Sample Room Floor Plan



RTS03 - Collaborative Space

Pedagogy Statement

The interactive collaborative space offers the most flexible and innovative arrangement for learning and teaching, in a 'café styled' learning setting. The room can be used to facilitate instructional pedagogy via Zoom shared across multiple small screens and BYOD with a larger screen at the front. The room functions best for applying an experiential learning (or a collaborative "learning by doing") approach through the provision of strategies such as peer teaching and differentiated instruction. Cooperative learning can be enabled in table groups.

AV Function

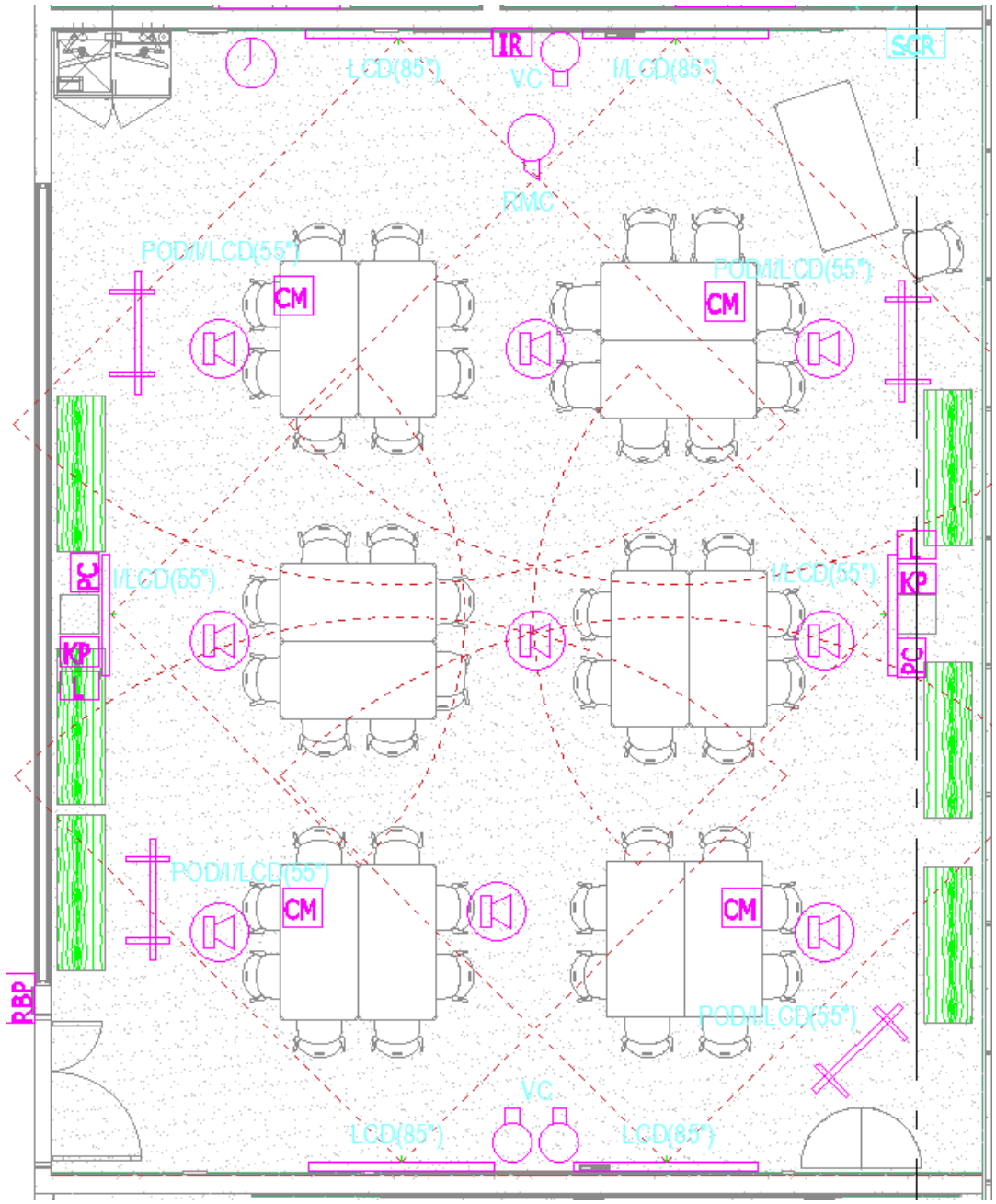
As an extension to the RTS01 – Teaching Space with Zoom, these spaces invite and enable exploration and participation of a variety of learning scenarios, by adding additional end user collaboration devices or Pods. Video Conferencing, multi-content sharing, and user led comparison are enabled by multiple presentation screens, including teacher presentation screen/s, and several Zoom Pods for students. The teacher is provided with a mobile pedestal with wireless connectivity to better enable movement around the room. Pods best seat six students and can be made up of either wall mounted equipment, or free standing MoCoWs or supplemented by students bringing their own devices (BYOD). Although BYOD is becoming more common, classrooms of this type should have Pods available to at least 60% of the class.

Technology in this type of classroom is underpinned by the correct furniture and fixings within the overall solution.

Key Features (included):	**Optional Extras:**	**Exclusions (incompatible):**
• Touch Panel Control System • Document Camera • Wireless Presentation • Premium Room Audio • Hearing Augmentation • Support Phone • Adjustable Height Lectern	• Proxy Card Door Swipe • Tracking Camera • Additional Presentation Screens • Additional Teachers screens • In Room and Wireless Microphones • Whiteboard Capture Camera	• Echo360 Lecture Capture • Integrated Light and Blind Control • House PC with Touch Monitor

Similar Rooms:	**Budget Range:**
• SandyBay.Humanities.477 • SandyBay.Engineering.302	• $100K-$300K

Sample Room Floor Plan



TS10 – Lecture Theatre (with optional Video Conference)

Pedagogy Statement

The 'Harvard Lecture Theatre' styled rooms and other configurations in this model enable large-scale instructional pedagogy. Collaboration, peer learning and discussions are also possible within each room, where not reliant on technology (except BYOD). Wireless microphones enable lecturers to move around the room. If video-conference connection to other rooms is implemented, automatically focusing cameras (if included) enable communication between students in the room and those connected through video conference.

AV Function

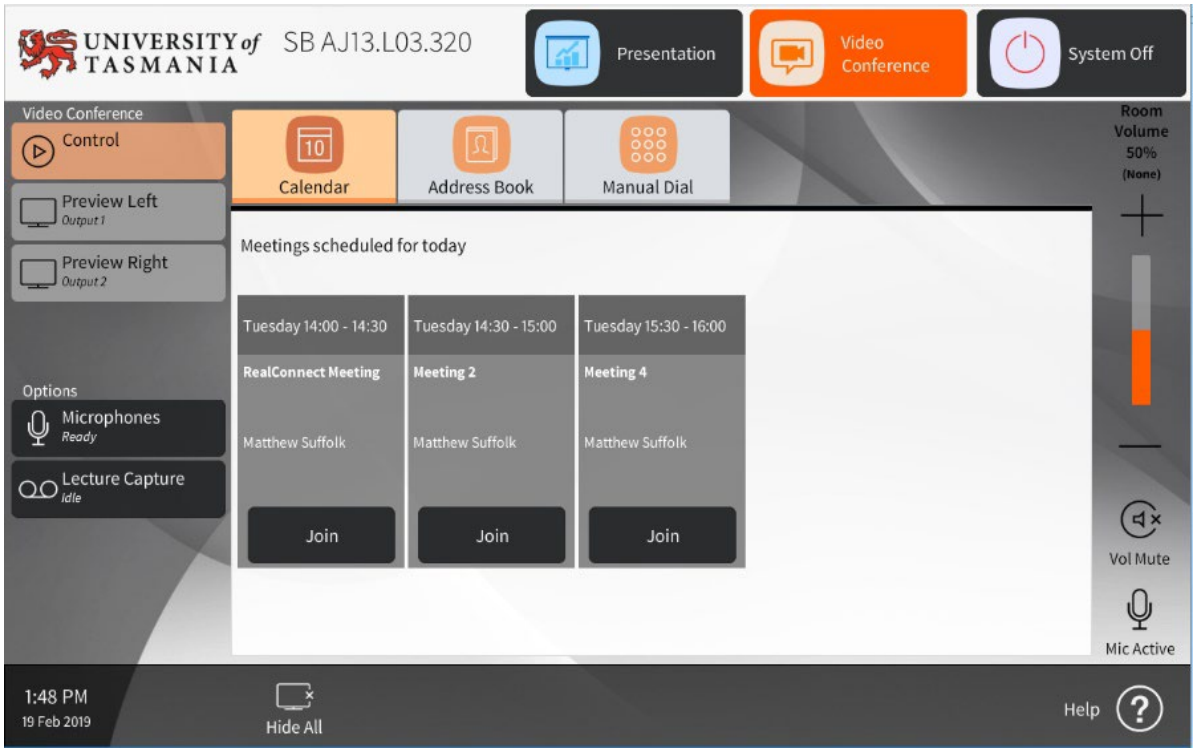
Suitable for rebuilds of existing lecture theatres only, offering premium teaching to a large audience within the room while also allowing effective collaboration between sites in a traditional lecture theatre setting. This solution is available in numerous screen sizes to suit your space. Dual screens are mandatory in a video conference space so not all venues will allow for this solution. Wireless presentation and microphones allow teachers to leave the lectern. Rooms are fitted with camera technology so that the presenter and the content can be recorded for Echo360 playback or streamed through various platforms. Lecture theatres may also support a panel of speakers at the front of the room.

Key Features (included):	**Optional Extras:**	**Exclusions (incompatible):**
• Touch Panel Control System • Adjustable Height Lectern • Dual Front Screens • Tracking Camera • Echo360 Lecture Capture • Document Camera • House PC with Touch Monitor • In room and Wireless Microphones • Teacher Wireless Presentation • Premium Room Audio • Room AV Control • Hearing Augmentation • Integrated Light and Blind Control • Live Streaming • Support Phone • Timetable Tablet • Proxy card door access	• Confidence display/s • Additional Screens • External Venue Repeat screen	

Similar Rooms:	**Budget Range:**
• OldIMAS 320 • Inveresk IR181	• $200K-$250K

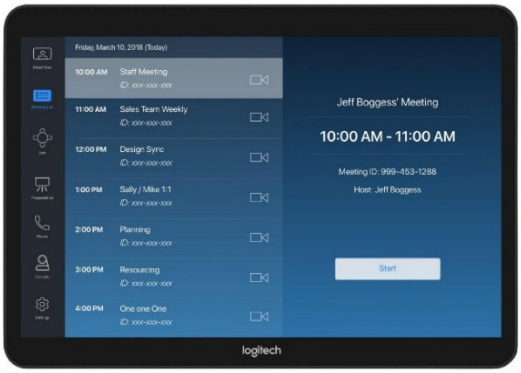
Standard AV Control Systems

Current generation touch panels and room control systems are consolidated.



From 2019 onwards, all new touch panels are deployed using a universal code base created by Control Gadgets. This allows for a uniform user interface across all room with Advanced control. Found in Lecture Theatres and Collaborative spaces

Used in only basic rooms where touch panels are not required



Used in standard Zoom Rooms

Standard Lectern (Teachers Station)

All new spaces are required to offer a sit/stand teachers touchdown point/lectern. This helps cater to Disability Discrimination Act requirements.

The new generation UTAS Lectern is a standard production lectern common to many Australian higher education institutions. The lectern is available in numerous sizes with customised logos. (logo must meet UTAS Marketing and Branding Guidelines). The required size of the lectern is dictated by the AV equipment it is required to house, and the desired tabletop area. It also features motorised height adjusting technology to suit the preference of the user as well as making it wheelchair accessible.

Where minimal equipment storage is required or a lectern is not required, a standard 1500mm wide electronic sit stand desk can be substituted for a lectern/teacher's station. By default, this will be paired with a portable, adjustable height podium to allow a teacher to walk around a classroom while still presenting from their laptop.

Zoom Digital Whiteboard

Complementary to the standard Zoom room space designs is a digital whiteboard. This can be wall or trolly mounted.

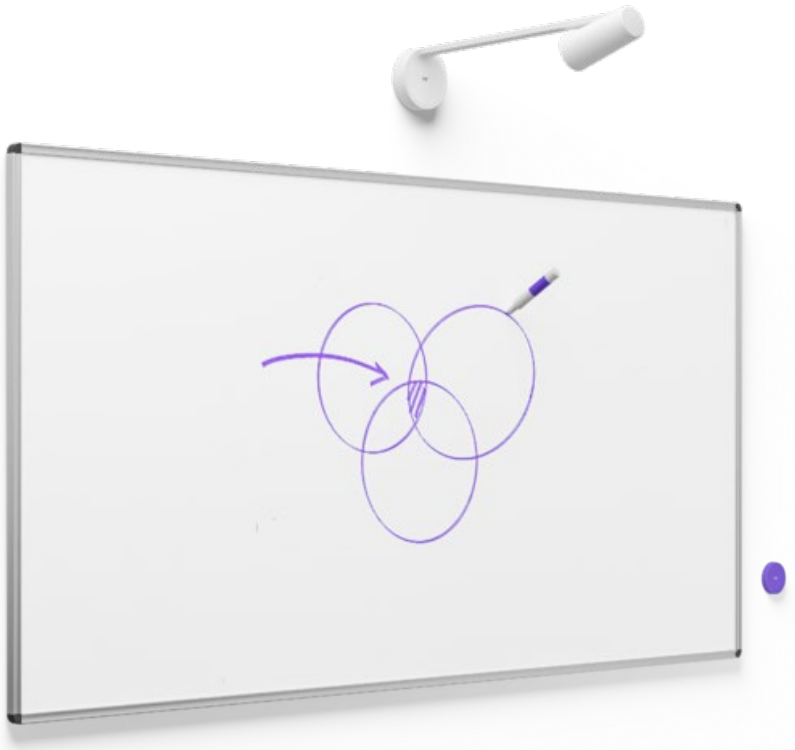
The Zoom Whiteboard is integrated into the Room system allowing digitised whiteboarding to be shared to the room content screens, and remote participants as content.

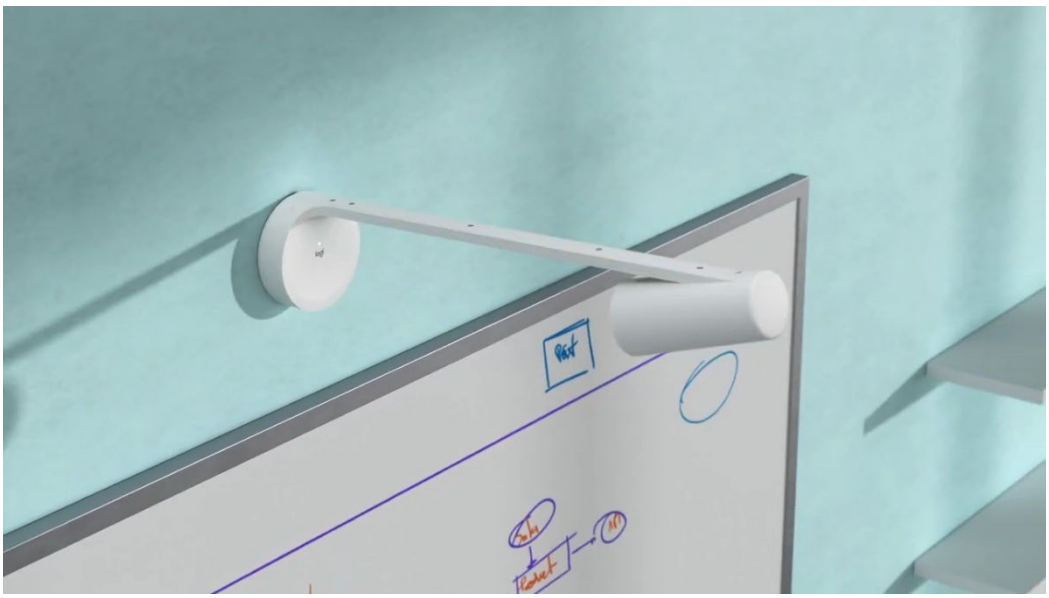
The whiteboard also allows for the annoation and markup of shared content to the Zoom Call.

Zoom Whiteboard Capture Camera

As an add-on product to an existing or new whiteboard, the capture camera will allow a user to share the whiteboard content into the Zoom call as content. No longer does the whiteboard only benefit the in-room audience.

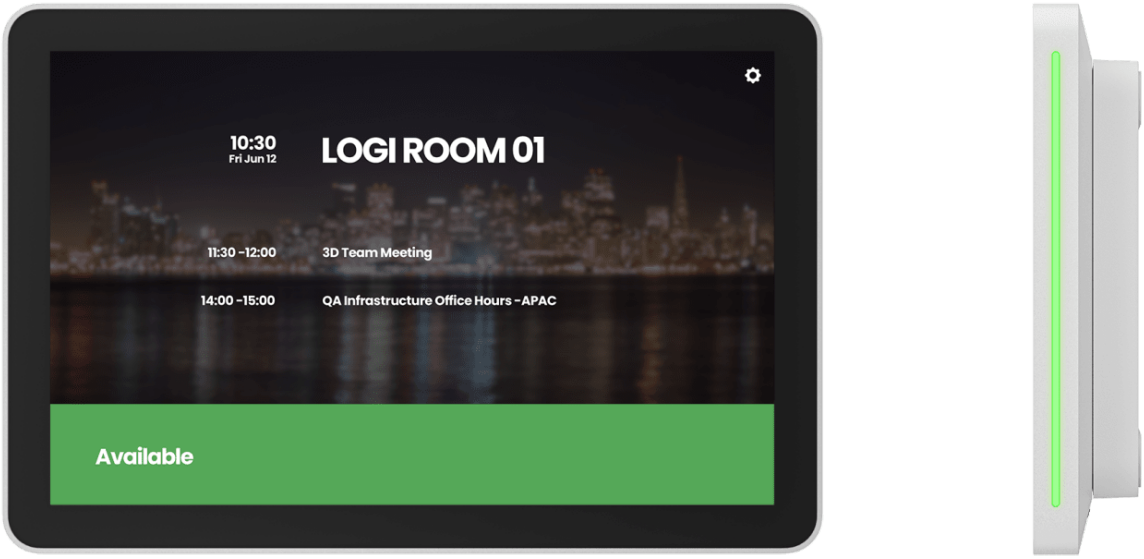
Zoom also enhances the content to provide a sharper and clearer image online than using a document camera or pointing a camera at a whiteboard.





Room Timetable Tablet

Room scheduling tablets for Teaching Spaces are Logitech branded devices. These integrate with the University's timetabling system Syllabus Plus via Microsoft Exchange.



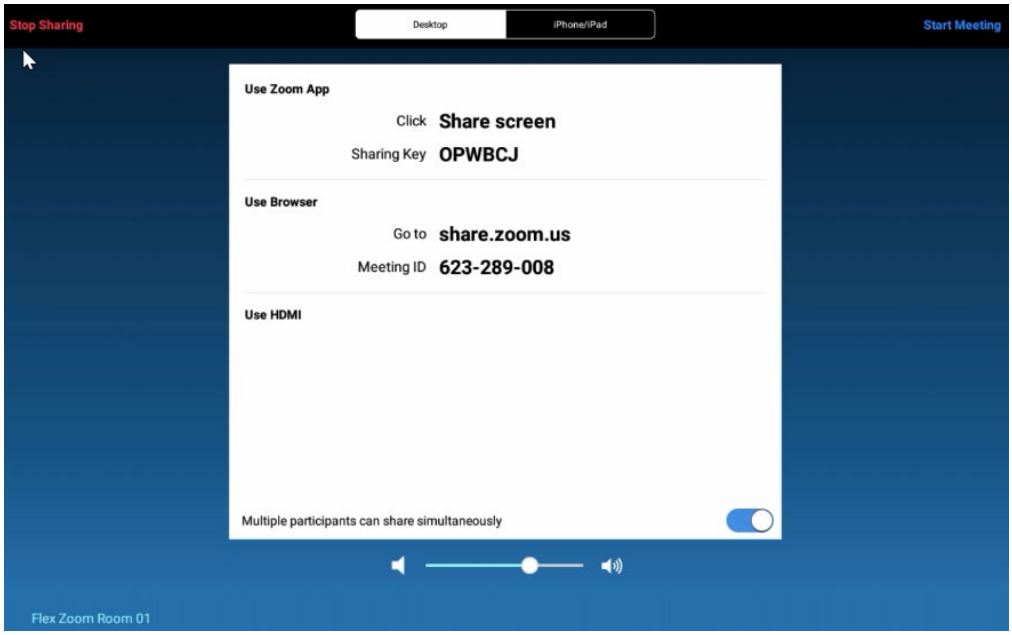
Wireless Presentation

All teaching space designs offer a wireless presentation solution for standard UTAS laptops. This includes Windows PC and Mac OSX.

In addition, the proposed solutions offer IOS and Android connectivity options.

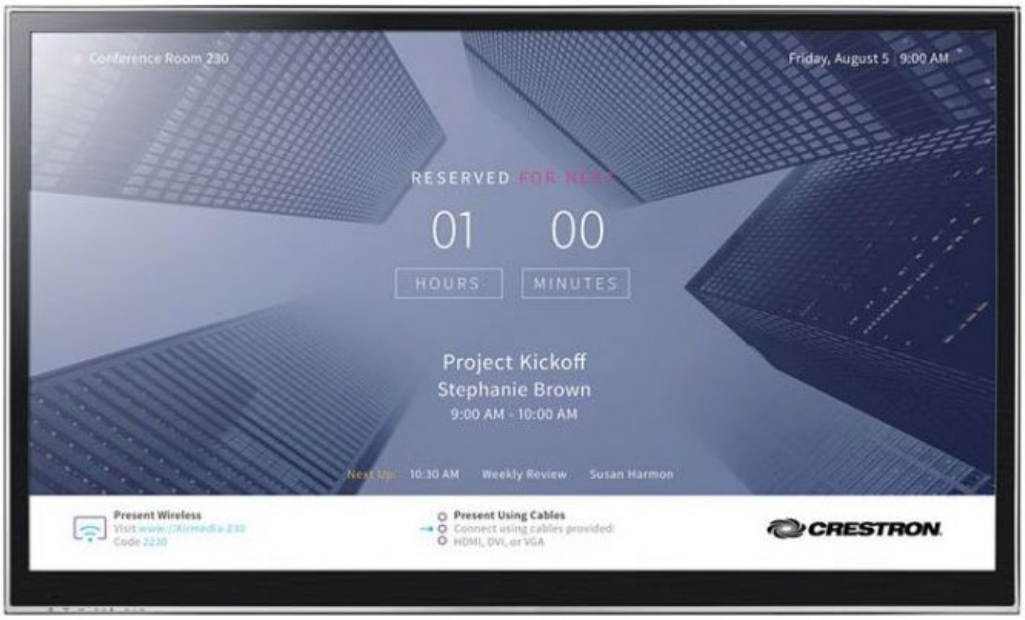
Zoom Room Wireless Sharing (Default)

Native to Zoom Room based classrooms (RTS01 &RTS03) and Zoom meeting rooms.



Crestron AirMedia Wireless Sharing

Used in more advanced spaces where custom control systems are implemented.



Tables

Furniture impacts how a space can function, not only the technology but also the pedagogy. To make spaces as flexible as possible, furniture needs to move. Foldable tables on wheels are the preference in all teaching spaces to allow being moved into different group or individual configurations or pushed to the side when not in use.

Matte finished table tops required to reduce glare from lights affecting cameras. Otherwise this impacts recordings and Zoom calls. Ideal examples of desks include:

Folding Desk Example: ICL – UR Folding

Table dimensions

1500mm x 750mm

Capacity of 2 on each long side

Capacity of 6 if 2 tables placed side by side

1800mm x 750mm

Capacity 3 on each long side

Capacity 8 if 2 tables placed side by site

Chairs

To make a space as flexible as possible, stackable chairs are the most useful as they can be easily moved out of the way when not required. Manoeuvrability allows for better group work therefore casters are equally important.

For optimal acoustics, chairs should be either fabric or mesh instead of hard reflective surfaces. Ideal example of a General Learning and Teaching chair:

Herman Miller Caper chair - Black Stackable chair with FLEXNET seat on wheels for maximum flexibility

In computer labs where tables are fixed, ergonomics are far more important, there is no need for a stackable chair, an ergonomic task chair on casters should be used.

Video Conferencing Screen Details

UTAS video conference standards require a minimum of 2 screens within a space, this is to allow for Content + Far End Audience. Having a dedicated screen for the remote audience allows for improved engagement of the audience members not physically in the room.

Screen distance viewing guidelines apply to both screens; therefore room size may not suit dual screens, which will result in Video Conference not being suitable for some rooms.

Providing presenter facing repeat screens (e.g., at the rear of a room) also allows for more direct engagement between teacher, live audience and remote audience.

2 Screen Room (Standard)

One content screen and one audience screen, these can be replicated around the room to for dispersed viewing options

3 Screen Room (Advanced)

Ideal for highly engaging spaces, the third screen allows the presenter/audience to see gallery view, and active speaker at the same time content is being shared.

The primary content screen must comply with the screen viewing guidelines.

1 Screen Room (by exception)

Dual screen rooms are the preference as they are more inclusive for the remote audience, single screen rooms are by exception only based on the room size/shape.

Screen Size Guidelines

The University follows the higher education standard guidelines for screen size as documented by ATEM (Australian Technology)

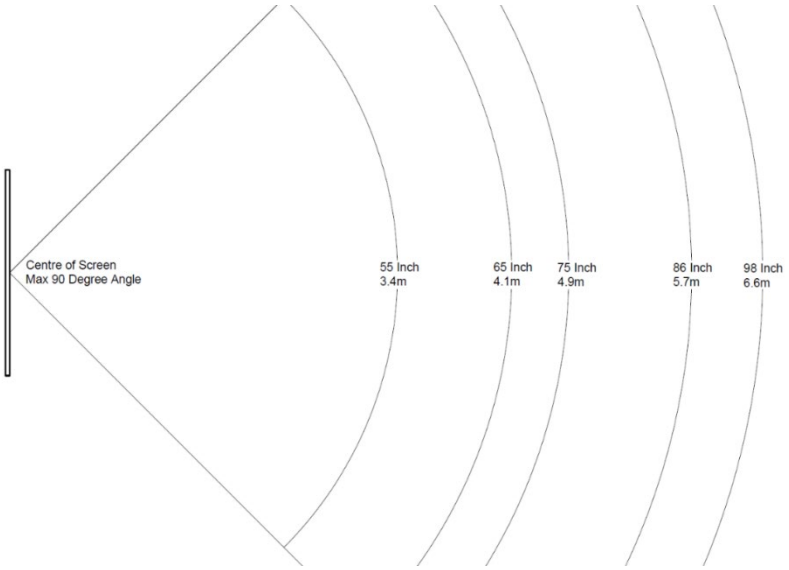
The guideline ensures that everyone in the room is in adequate range of the content screen so that no audience member is disadvantaged by their seating position. Achieving this can be done by installation of the appropriate screen size for the room, or by including repeat monitors within a larger room. The below chart refers to the furthest distance anyone should be sitting based on the screen size.

NEW AND UPGRADED SPACES MUST COMPLY TO THESE GUIDELINES.

Display Size (LCD)	Viewing Distance (Min)	Viewing Distance (Max)	Required Ceiling Height
43" Display	1.1m	2.8m	2.4m
49" Display	1.2m	3.2m	2.4m
55" Display	1.3m	3.6m	2.4m
65" Display	1.6m	4.3m	2.4m
70" Display	1.7m	4.6m	2.4m
75" Display	1.8m	4.9m	2.5m
86" Display	2.1m	5.7m	2.6m
98" Display	2.4m	6.5m	2.7m

Display Size (Projection)	Viewing Distance (Min)	Viewing Distance (Max)	Required Ceiling Height
100" Screen	2.7m	7.1m	2.7m
120" Screen	3.2m	8.6m	3.0m
130" Screen	3.5m	9.3m	3.2m
150" Screen	4.0m	10.7m	3.4m
200” Screen	5.4m	14.3m	4.2m
300” Screen	8.1m	21.5m	5.5m

Below is an example of how screen size is reflected in viewing distance. Viewing distance shown is furthest person from the centre of screen, at no more than a total angle of 90 degrees.



Room Environment Considerations

Any proposed alterations to the use, capacity and/or configuration of a room must be undertaken in consultation with Infrastructure Services and Development (ISD), which bears responsibility for the management and development of University built space.

ISD will work with clients and ITS to:

- ensure efficient use of space (e.g. maximise utilisation, wherever practicable, through creation of flexible, multi-use spaces and shared resources)
- ensure strategic alignment of the proposed development with broader University built environment planning considerations
- ensure that the space is appropriately equipped and fit-for-purpose (i.e. appropriate furniture, fittings and configuration)
- undertake construction, fit-out and building services works, as required.

ISD will also work closely with ITS to ensure that room configuration, fabric and fittings optimise AV and technological performance; for example, through:

- installation of appropriate window treatments and lighting
- consideration of the acoustic properties of building materials and fittings
- selection of furniture to minimise light and sound reflection
- configuration of furnishings to optimise viewing angles.

ISD should be consulted as early as possible during the planning phase of any proposed development. Contact with ISD should be initiated through an **ISD Connect**.

Glossary of Terms

Term	Description
Display	Fit for purpose screen for size of space, could be projector or LCD
Software Codec	Video Conference capability running on a computer-based piece of hardware
Hardware Codec	Video Conference capability from dedicated video conference hardware/box
Control Panel	Touch screen device used to control room and presentation features
AV	Audio Visual
CMLS	Centrally Managed Learning Space
LMLS	Locally Managed Learning Space
BYOD	Bring your own device
Wireless Presentation	A means to connect to a display wirelessly from a laptop or tablet
Confidence Display	Dedicated screen for teacher to view their own content (removing the need to turn around)
Hearing augmentation	In room and/or remote audio is enhanced for in-room participants with hearing difficulties, usually through an infra-red or induction loop system
Zoom	Software-based video conferencing system
Polycom	Hardware-based video conferencing system
Touchdown Point	Location in a room where the presenter can operate the room functionality, but unlike a traditional lectern the presenter is expected to roam the room from this position
Echo360	Recording and live streaming platform with hardware and software-based solutions

The following provides a glossary of terms used throughout the pedagogy statements. These do not present definitive or conclusive definitions, but rather a guide. Many of the pedagogies defined below remain theoretically and empirically contested.

Term	Description
Collaborative pedagogy	Pedagogy oriented around enabling student-to-student interaction, discussion, and cooperation in achieving their learning outcomes.
Cooperative learning	Learning where the process of student learning is through small-group activities and teacher facilitation.
Differentiated pedagogy	Pedagogy that focuses on diverse student learning needs and preferences
Experiential learning	Learning that is conceived as a holistic process of adaptation to the world and recognises the learning results from re-learning, person-environment synergy, and a constructive view of knowledge creation.
Formative assessment	Assessment tasks that are designed primarily to provide feedback to students on their progress against learning outcomes. Formative feedback can also inform staff on student progress which can inform their teaching.
Inquiry-based learning	Pedagogy that promotes higher order intellectual skill development from student-driven and instructor-guided investigations (often of student generated questions).
Instructional pedagogy	Pedagogy that typically emphasises the quality of educator-driven instructions towards students.
Learning Management System	At UTAS, the Learning Management System is called My Learning Online (MyLO).
Peer teaching	Enabling students as proctors for the facilitation of class discussion, or instructorless self-directed student groups learning from their peers.
Teacher-centred pedagogy	Pedagogy that positions the teacher centrally in the learning process with typical reliance on whole-class lectures and completion of lower-order tasks with high power differences maintained between teacher and student.

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Building a new Room?

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