Project Name

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UNtitled Project Location

George Coles

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| Client Details | | | | |
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| Contact Name |  | | | |
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| About Alder Technology | |
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| Founded in 2008 by Simon Alder, Alder Technology has become a leading provider of technology solutions, audio visual consulting, project management and implementation advisory services. With offices in Melbourne, Sydney and Brisbane, Alder Technology services all states of Australia and boasts a diverse client base across all major sectors.  Alder Technology has become a leading authority on the implementation of Microsoft Teams Rooms in this country. With installations across Australia, plus partner programs in New Zealand, Singapore, the US and UK, Alder Technology has deployed hundreds of rooms in all types of environments. The staff at Alder Technology know the product inside and out, and in fact have directly assisted manufacturers in the development of Teams certified equipment.  With a host of qualifications, including Microsoft, Cisco, Crestron Masters, QSC Level 2 and Prince2 Project Management, Alder Technology has the capabilities and resources to deliver Teams Rooms of all shapes and sizes. | |
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| Executive Summary This tender focuses on enhancing audio-visual capabilities across various meeting spaces, from huddle rooms to boardrooms, with a tiered approach to equipment and functionality. The primary scope involves equipping key boardrooms with high-definition commercial displays, ranging from 75" to 100", ensuring optimal viewing for all participants. These displays are designed for easy integration with future conferencing systems.  Beyond the boardrooms, the tender includes provisions for display installations in Huddle spaces, medium & large sized rooms. This ensures a consistent, high-quality visual experience throughout the organization.  A key component of this tender is the option to upgrade any room with advanced collaboration technology. These upgrades feature Microsoft Teams-certified Cisco Systems, including Room Bar and Room Bar Pro units, offering features such as intelligent camera framing, integrated microphone arrays, and seamless BYOD connectivity. This modular approach allows for tailored solutions that meet the specific needs of each meeting space, ensuring both scalability and optimal performance.  When reviewing each room, there is a clear mindset for supportable, sustainable and maintainable spaces, which uses the “EASE” theory.   |  |  | | --- | --- | | **E** | **Environment.** The room environment is carefully analysed. Display mounting, cable paths and speaker/microphone placement are all defined by the environment in which they are installed. | | **A** | **Acoustics.** The most important item is acoustics. Successful collaboration relies on all participants being heard clearly. If the audio is poor, echoes, or the users sound like they are in a bathroom, the solution will not be utilised to its potential. Soundbar systems are not appropriate in all rooms, and this is why prior to any installation we will perform an acoustic assessment in each room to verify the solution selected. | | **S** | **Screens.** The display selected follows a clear formula, with the size dictated not by the size of the room, but by the location of the participants. Single screen solutions also have reduced content size, as the participant windows take up screen real estate, and reduce the size of the content. | | **E** | **Equitability.** This is not only a near end but also a far end consideration. Can everyone in the room view all content and participants? Can everyone in the room be heard? Can the far end participants hear, see and share content? Poor room design or “value managing” systems to remove microphones and speakers create a “haves” and “have nots”, and reduce their usage as users look to alternatives with greater meeting equity. | |
| Alder Technology uses specialist methodology to provide best in class spaces based on the key factors above. The methodology means lower cost and less time onsite during deployment, and higher uptime during the lifespan of the equipment. Alder Technology takes the responsibility of the performance of the system for the life of the equipment, ensuring reliable, dependable systems and an ease of use for the users which is second to none.  These solutions provide the best value, and return on investment over the lifespan of the system, and turn the humble meeting room into an immersive and engaging tool for true collaboration. |

Table of Contents

[Client Details 1](#_Toc216766945)

[Document Control 1](#_Toc216766946)

[Version Tracking 1](#_Toc216766947)

[Alder Technology Contact Details 1](#_Toc216766948)

[About Alder Technology 2](#_Toc216766949)

[Executive Summary 3](#_Toc216766950)

[Video Collaboration in the Modern Age 6](#_Toc216766951)

[Key Concepts 7](#_Toc216766952)

[Video 7](#_Toc216766953)

[Audio 8](#_Toc216766954)

[Software Based Conferencing 11](#_Toc216766955)

[Alder Technology Meeting Rooms Implementation 12](#_Toc216766956)

[Network Based Systems 13](#_Toc216766957)

[Audio Choices 16](#_Toc216766958)

[Staging and Preparation: 18](#_Toc216766959)

[Maintenance and Support 20](#_Toc216766960)

[Room Installation 21](#_Toc216766961)

[Methodology 21](#_Toc216766962)

[Proposed Solution 22](#_Toc216766963)

[Installation Services: 22](#_Toc216766964)

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| Video Collaboration in the Modern Age:    In 2018 Cisco Spark was integrated into Cisco Webex, heralding the start of the new platform. When Skype for Business was phased out in 2021, Microsoft Teams Rooms (MTR) became the new standard for meeting room conferencing in Microsoft Environments.  Add some time for adoption and it has been a relatively short time that software based conferencing has been used in a commercial sense.  Prior to this, there was mainly hardware based systems, using Cisco (Tandberg), Poly or Lifesize, plus some smaller players. These systems required traditional Audio Visual systems, with traditional Audio Visual control. They were cumbersome, complicated and required a lot of hardware to be effective.  The software conferencing revolution has changed this, but unfortunately many design and installation methods have not.  Software based conferencing is a new form of technology. It is not IT, nor is it AV, yet it takes elements from each. It must be treated as its own genre, but a partner with experience in software, networking and audio visual.  Alder Technology made the pivot to specialising in the conference room in 2019, as Skype for Business was gaining traction. As software based conferencing specialists, we have a dedicated team which manages all aspects of the installation, and can partner with you every step of the way. |

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| Key Concepts  There are a number of key concepts which must be reviewed prior to delivery of the solution. These form the basis of the meeting room experience, and are crucial to the design and delivery of effective spaces. |
| Video  There are two main considerations with video in this project, video in and video out.  For video in, it is important that there is not too much hardware used, and that the software is used for presentation of content as much as possible in lieu of hardware (as explained below).  For video out, the height of the display is extremely important. Ideally, participants should be seated at a distance of no more than 6x the height of the screen, and no closer than 2x the height of the screen (see below image).  CE Center - Projection Screens Made Simple  This is important because this is for traditional presentation only, which is appropriate in dual display rooms, where content is on a full display and participants on another. This changes in single display Teams rooms, as the “Brady Bunch” effect of multiple windows with the far end participants reduces the content size even more. So even though the display may be an 85”, the actual content window may be only a 75” or less. Therefore, where screen sizes are a bit small for the room, dual screen should be strongly considered if larger displays are out of budget. |

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| Audio  Audio is the most important part of the meeting. You can turn your camera off and still have an effective conversation. But when the audio is poor, people do not have a good experience, and when a good experience is not provided, people do not use the asset. Poor audio choices do not save money, they waste money through under-utilisation. The focus must be on Speech Intelligibility (SI).  The key aspects for speech to be clearly heard and understood are:   * Low ambient noise level, ensuring the intended speech is clearly prominent above all other noise. * Control of late echoes, standing waves and reverberation, limiting the noise build-up in the room that interrupts and muddles the discussion.   There are many factors which contribute to a good audio experience for the user. The following must be taken into consideration: | |
| **User Experience**  Hybrid working has created a new baseline experience for users. In the past, users were accepting of poor audio in a meeting room. Now, post covid and amidst the hybrid working revolution, users have a new appreciation for what a good experience is. Working from home. they have speakers on their ears, a microphone right in front of their mouth, and a camera framing them perfectly. If a meeting room does not deliver this experience, users won’t adopt it. |  |

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|  | **Ambient Noise**  Ambient Noise is a critical factor in the meeting room. Air conditioning, road noise or office noise that is picked up by the microphones may be transferred to the far end.  Typically, VC system suppliers recommend ambient noise levels of 30-35dBA to have a good buffer between speech and the background noise level. This is generally much lower than a base-building provision of 40-45dBA, suitable for open office areas. We often see meeting rooms with ambient noise levels above 50dBA. |
| **Reverb (RT60)**  Typically, suppliers of VC systems recommend a reverberation time (RT60) in the range of 0.3 to 0.5s. This is typically more subdued or dead than a standard meeting room. The recently released Australian Standard AS/NZS 2107:2016 goes further, recommending a range of 0.2-0.4s for dedicated VC / audio conference rooms.  Internal finishes should be carefully selected to provide the right balance of absorption and reflection.  This is not always possible, and audio visual electronics are required to compensate for high reverb. |  |

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| **Equipment Selection**  As little as five years ago, video conferencing was an expensive addition to a building, and as such most meeting rooms were not designed with conferencing in mind. Many have high ambient noise – above 50dBA, and/or high reverb over 0.6sec. They do not meet the standards recommended above.  This makes audio visual equipment selection extremely important. Equipment selection can’t just be done by size (e.g. this soundbar is rated to 4.5m). If the room acoustics are poor, physics dictates the audio system must be expanded to meet the demands of the room. Newly released soundbars such as the Biamp VBC-2500 use AI to tune themselves to the room, and can overcome minor acoustic issues in the room. There comes a point however, where a front of house microphone system cannot overcome the acoustics in the room. As such, it is vital we know how each room responds acoustically.  Each room is pre-tested in an inspection to get ambient noise and RT60 values, validating the equipment selected. Even in a small room, where a soundbar might work in perfect conditions, a dedicated microphone and audio processor is used to compensate for the acoustic conditions. This control processor is essential in acoustically challenging rooms. Placing conferencing soundbars or basic processors with no tuning capabilities is a major risk to the project, and may lead to the equipment needing to be ripped out and replaced. In particular, adjustment of Acoustic Echo Cancellation settings is one of the most important features a processor can have.  Core Nano Some processors, with a focus on the mass market and high user adoption, limit their ability to manipulate the audio, leaving them unable to manage a poor acoustic environment. Units such as the Shure P300 struggle in this way.  This is why we choose the QSC Core Nano. It is network based, Teams certified, can independently tune eight (8) AEC inputs, and can be scaled to twice the processing power and 16 AEC channels, making it ideal for almost any sized room. |

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| Software Based Conferencing:  The software based conference room, whether it be MS Teams, Zoom, Cisco or other, is specialist, and should not be considered IT, nor should it be considered AV. It is a specialist hybrid of the two, and room designs must reflect this. In all aspects, it is important to use the software in the way it was designed. Additional hardware such as wireless presenters and control processors fix the functionality in place, and do not allow the system to grow as new features and benefits are added over time. | |
| **Equipment Selection**  These rooms run on software now, not hardware. Adding unnecessary hardware can interfere with this software, limiting its functionality. Similarly, placing non-certified hardware can cause conflicts in your system, reducing the room’s effectiveness and limiting support options from your software provider. Hardware must be Teams Certified. | Microsoft vs Cisco vs Zoom - Leaders Share their Market Winning Insights at  Channel Partners Conference - UC Today |
| **Networking**  Software based conferencing is now ubiquitous, and as the room count rises, so do the networking requirements. Conferencing software has specific port and QoS requirements and the bandwidth can be surprising. For example, at full throttle with screen sharing enabled, Microsoft Teams can run at up to 10Mbs/6Mbs Upload/Download. | Microsoft Azure 101: A Beginner's Guide - Techopedia |
| **The Room Itself**  There are now far more factors to consider in a room. As rooms have become simpler, they move away from racks, meaning power and data is relocated into the room and more data is required than old analogue systems. Additionally, rooms are being turned into conferencing rooms that were never intended for conferencing. The acoustic delta must be made up, either with room treatments, or audio visual smarts. | Connect with Teams Meeting Room | Continuant |

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| Alder Technology Meeting Rooms Implementation    Meeting rooms hardware is simpler than ever, but the combination of audio visual, network and software make them more complex than ever to deliver. Once they are complete, when done correctly they provide users with the greatest ease of use we have seen in meeting rooms to date. Alder Technology implements only meeting rooms, with vast experience in delivering conferencing and collaboration rooms in a software environment.  There are four main areas of focus when delivering a new age conferencing room:   * Network Based Systems * Audio Choices * Staging and preparation * Ongoing Maintenance, Service and Support | |
| Network Based Systems  Where possible, every piece of equipment is IP based, and Power over Ethernet where available. Whilst there is Teams certified hardware which is not IP based, no other option gives the flexibility, monitorability and supportability of IP based hardware. IP based systems provide the best options for pre-staging, deployment and support. It minimises installation time and increases uptime of the system. | |
| **The MTR**  There are many different manufacturers of Microsoft Teams Rooms, and the choice of vendor is important. We select vendors that have two very key aspects to their hardware stack – network based consoles and cloud based monitoring. A network based console allows flexibility of location, and even multiple consoles. Importantly your console can be anywhere you put a data point, and you’re not limited by direct cable paths or proprietary cables. And with a network based console it is not just the Teams Compute that can be seen in the cloud. The console as well can be monitored, supported and controlled in real time. | Crestron UC-C100-T Crestron Flex Video Conference System Integrator Ki |

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| QSC CORE NANO โปรเซสเซอร์ | AT Prosound | **Audio Processing**  A network based processor gives many advantages, not the least of which is the remote monitoring capability. Paired with its microphones and speakers, the system can be remotely supported, room retuned, and critical updates deployed to give the best experience with new and exciting features from the conferencing software. Software based conferencing is constantly tweaking its audio algorithms, and quick changes are often required to adapt to the new requirements.  A second network port on the processor allows for all multicast audio and video traffic to be kept off the client network, isolated for performance and security reasons, whilst remaining monitorable through the control processor. |
| **Speakers and Microphones**  Network based speakers and microphones allow for multiple channels of audio to be sent across the room on a single cable. Removing specialist cabling from the room means the room can be pre-wired for power and data, greatly reducing time at installation. The network based products greatly reduce installation errors, and the units are visible the moment they are connected. Network based technology also reduces the amount of equipment required. The same processor can do any size meeting room and amplifiers are not required. The system can be scaled to any size room simply by adding microphones and speakers | Infällnadshögtalare 4", PoE Sennheiser TeamConnect Ceiling 2 Ceiling Microphone With TrueVoicelift | AV  Australia Online |
| M4250 AVLine AV-over-IP Switches | NETGEAR | **AV Networks**  Running a segregated network allows for all multicast traffic to be isolated off the client network. Additional speakers, microphones and cameras can be added to spare network ports, scaling between medium, large, extra large and flexible rooms.  The network switch can be monitored via the Out of Band port, allowing remote configuration, and remedial action such as bouncing POE ports to hard reset microphones, cameras and speakers when required. This is completed natively within the monitoring system from Azure without requiring any user connectivity to the local network. |
| **Conferencing Soundbars**  In smaller rooms, conferencing soundbars are used as the combine cameras, microphones and speakers in a convenient and cost effective single unit. Traditionally, these have been difficult to monitor in any detail. The soundbars selected have network connectivity, and in addition are native Teams units, which sync to MS Teams for automatic firmware updates to ensure compatibility with new software updates from Microsoft. | Parlé conferencing bars for business conferencingJabra PanaCast 50 |

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| Audio Choices  As stated above, the correct audio choice can make or break a room. Get the audio wrong, and it becomes a white elephant that people do not want to use. Below are our processes for equipment selection. |

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| Biamp May 2021 Component Newsletter | **Conferencing Soundbar**  A conferencing soundbar is used in small spaces. It is a cost effective combination of camera, microphone and speakers. In very small rooms, where users are close enough to the display to overcome any acoustic challenges, a Panacast 50 soundbar from Jabra is used. This Teams Certified bar has a 180 degree field of view, allowing users to be on sharp angle, and allowing tables to be placed against the wall.  In rooms up to 4.5m long a Biamp VBC-2500 is used. This bar uses the “Launch” feature. An AI based tuning system which emits audio and analyses the return, optimising the internal processor to the room.  This has been a game changer in small to medium rooms, allowing a cost effective system in rooms that wouldn’t work in the past.  When the distance to the furthest participant is greater than 4 metres, and the RT60 in the room is above 0.7 seconds we are reaching the limits of the bar and a dedicated audio system should be considered. |

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| **Dedicated Audio Systems**  A dedicated audio system is required when the distance to the furthest participant is over the maximum range of a conferencing soundbar, or the room acoustics are poor. We define poor acoustics as over 50dBA ambient noise, or an RT60 value of above 0.7 seconds. When the room acoustics are poor a processor, network based microphone and POE speakers are required.  It is not only the equipment selection that is important, placement is also vital. During the pre installation walk through, the speakers and microphones will be located in the room, and their heights determined. In rooms with poor RT60, microphones may need to be suspended lower to get them closer to the speaker and get a better result. |  |

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| Staging and Preparation:    A key difference in our approach to most vendors is the extensive staging and preparation process we go through on every project. The staging is the most important element in our process. It sets the tone for the project, greatly reduces errors and time onsite, and provides certainty with the installation. Many vendors will “drop ship” equipment to site. There are no updates, no testing, and no idea if the equipment even works. It is reliant on technicians scrambling onsite to try and update and commission the hardware.  Based in our Technology Centre, our staging area is able to prepare up to 15 rooms simultaneously, and coupled with over 100m2 of warehousing floor, we are able to scale very small to very large projects efficiently. Each item is firmware updated, configured and tested. We open and label every cable to be used in the project, and the cable used for testing is the cable that will be installed in the room. We input client credentials, and we make test calls with the system. The items are carefully packed and shipped to site, knowing they are working 100% when they leave the Tech Centre.  The benefits of our staging are numerous:   * Rooms are able to be updated, configured and tested in 2-3 days. With up to 15 rooms simultaneously, 60 rooms can be prepared in as little as two weeks. * The preparation of these rooms means that on site installers can be scaled to meet the demand of the rooms. At Guild Group, 15 complex MTR’s, representing over $500k in value, were delivered onsite defect free in just four working days. * All equipment is registered as an asset in the cloud. It comes online instantly once it is installed on the client site. As such, if there are issues onsite, it can be narrowed down quickly as it was working on the bench. This saves an enormous amount of time onsite debugging and fault finding. * The client has access to all information before the equipment even hits site. Equipment details (Serial Number, MAC address etc) can be provided for network planning or accounting purposes, and test calls made to the equipment on the bench for licensing verification. |

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| Maintenance and Support  It is essential that all equipment is placed on a managed service contract. Unlike Cisco, Microsoft does not own its own hardware. It relies on partnerships with third party vendors, such as Crestron and QSC, to provide the hardware to make its software run. Like any software, it needs constant updating, and this can cause issues, conflicts and downtime. The managed service contract provides remote and onsite support, both preventative and reactionary, to keep uptime high. | |
| **Cloud Based Monitoring**  The main reason for network based equipment is our ability to monitor and maintain that equipment. Any updates, changes or tuning can be done remotely via our custom dashboard.  When an update installs overnight which causes a conflict, the fix can be sent remotely, and in many cases will be sent pre-emptively with the update from Microsoft. |  |
| If anything happens on the networking side, we can see in real time any changes to the system. If a touch screen console is unplugged, we will immediately be alerted.  Even the AV network switch is monitored, allowing us to “bounce” POE ports to hard reset any hardware such as cameras or speakers.  This greatly increases room uptime. Having to get a technician out to site is time consuming, and technicians may not be available straight away. Having this level of remote access and control keeps rooms up and running longer. | |
| **Onsite Support**  Every now and then onsite support is required. A power supply might fail in a display, or a critical hardware fault may “brick” a Teams unit. Where we cannot fix something remotely, all onsite work is included. There are no hidden costs, no call out fees and no “gotchas”. The maintenance agreement is all inclusive, such is our confidence in the stability of these systems. | |

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| Room Installation  New meeting rooms will bring increased functionality and productivity to the office, but they can’t be taken offline for weeks, and they can’t become white elephants once delivered, with poor audio or difficult user experience. The below represents the Alder Technology promise to get high quality rooms delivered quickly.  Methodology:  We note the following processes completed with all Microsoft Teams Rooms   * Rooms are audited to confirm design, power, data and any works in conjunction that are required. We meet with your team to go through network, M365 and logistic requirements. You will be assigned a dedicated project manager, and we will help you every step of the way. * All equipment will be unboxed in an “IT Bench” at our warehouse, connected to the network and preconfigured, tested and ready to go. From here, we will have all equipment updated with firmware, latest MS Teams software, and all settings and updates required for monitoring the systems for ongoing support. Rooms will be “working” prior to installation which shall create a more efficient install and minimise impact to the business. This eliminates one of the biggest pain points of a retrofit – a technician occupying a room for days with a laptop trying to debug systems, denying use to the staff who need the room. * All equipment will be installed onsite after any additional required power/data has been installed by other contractors. * Once physical installation is complete, Alder Technology will complete the commissioning of rooms and audio engineering as well as user training. |

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| Proposed Solution The proposed solution is offered below. We note that we expect minor tweaks to this system as the pre installation inspections are completed. There are often cases where some cabling may be difficult, and this is only able to be ascertained by a full room inspection completed by the project team. Installation Services: Each room will have the following services:  - Decommissioning of existing equipment where present  - Coordination of O365 and Networking requirements with client for all rooms.  - Coordination of all trades in association (power, data etc.).  - Offsite configuration and update (or onsite if client network does not allow for offsite configuration).  - Supply and Installation of Equipment  - Full Commissioning Services  - Audio Engineering  - Project Management  - As Built Documentation, O&M Manuals  - Training  This is a fully supported and managed installation. We do not merely install the equipment and leave you to setup and configure yourself. Our commissioning engineer will assist with all M365 and networking actions required to the performed by the client, and full training of the systems is included and provided. |