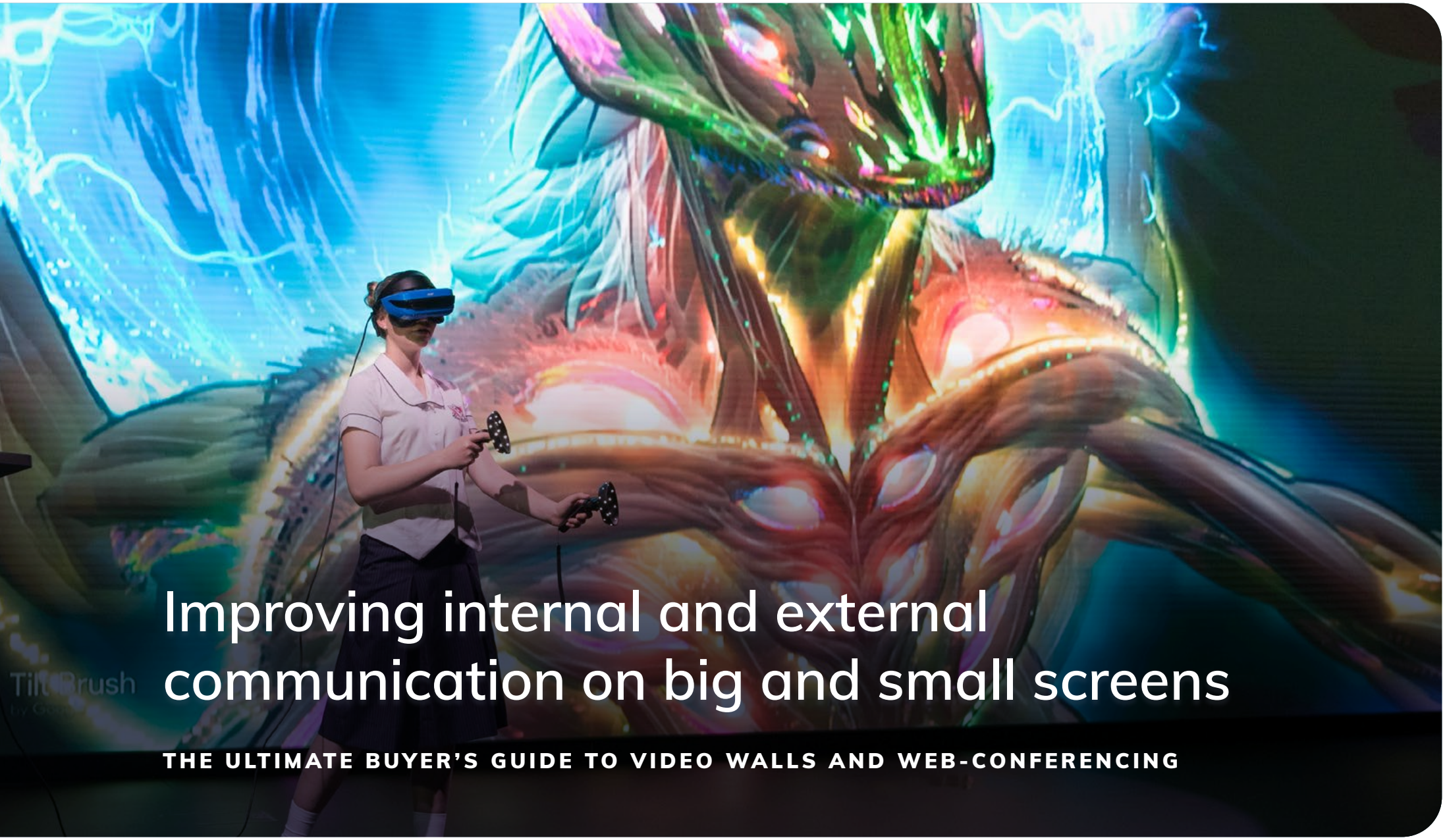


Improving internal and external communication on big and small screens

THE ULTIMATE BUYER'S GUIDE TO VIDEO WALLS AND WEB-CONFERENCING

Syndeticom
Digital Infrastructure Specialists

Improving communication on big and small screens

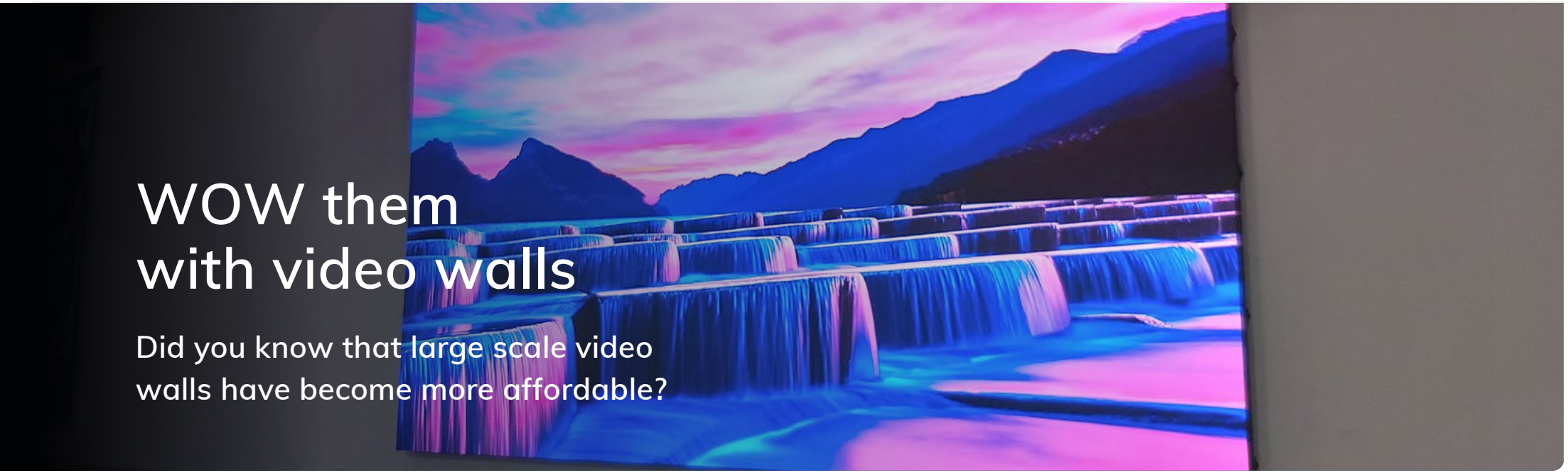
In today's busy and competitive world, many businesses are struggling to get their message through to the right people. Whether it's communicating with customers or collaborating with stakeholders, it is increasingly challenging to convey information in a clear, concise and engaging manner.

Thankfully, AV technology is emerging and maturing to the point where it can help your organisation address these challenges. Two AV solutions have been identified as particularly effective tools in optimising communication: video walls and web-conferencing. However, both can also place a significant burden on your business if not implemented correctly.

Video walls provide an excellent platform for getting your message out to a wide and diverse audience. However, there are a wide array of variables that can affect performance and return on investment. Web-conferencing has become an essential tool for most organisations, but without proper implementation, it can result in communication breakdown, inefficient time utilisation and frustration.

While fundamentally different technologies with different use cases, both video walls and web-conferencing have been conceived to provide effective communication – whether the audience is a passerby in a busy lobby or a team member working from home. However, the key to the success of these communication tools is the implementation of the technology, not the technology itself. Therefore, without the right implementation partner, collaborating effectively remains a challenge for some organisations.

This guide will provide an overview of these two communication technologies – both so different yet with much in common. The various benefits, use cases, pitfalls and common mistakes will be discussed, and the key factors organisations need to know about when investigating such a solution will be outlined.



WOW them with video walls

Did you know that large scale video walls have become more affordable?

Video walls have long been used at large and high profile events such as significant sports events and concerts. Due to their size and vibrancy, they are ideal for engaging large crowds (either static or dynamic) and enhancing audience experiences by making it easy to follow the action. As this technology has matured over recent years, video walls are increasingly being used in everyday situations such as lobbies and atriums, train stations, airports, lecture theatres and large meeting spaces, to name a few.

Projectors and old school screens – rest in peace.

Video walls are becoming a viable solution anywhere a large screen is required. In addition to replacing old technology, these solutions can also be employed where no suitable solution existed previously – such as a large atrium where projectors wouldn't be bright enough, and standard panel displays are not appropriate.

Video walls provide a solution that can blend in the space by deploying interesting shapes and curves, and by curating creative content. Bright areas with little control over light levels or weather are particularly suitable for video walls.

While still a significant project for most organisations, video walls have now matured to the point where they are becoming increasingly affordable. As a result, organisations for which video walls were out of reach just a few years ago are now starting to leverage this technology to get their messages across more effectively. However, they are still a significant investment, and businesses must focus on getting the right solution for their situation to realise a decent return on the investment.

Would your business benefit from a video wall?

Do you need a more effective way to communicate with a large audience? Do you want to WOW your audience? Do you have a space where a large visual message would be seen by a lot of people?

If you answer yes to any of these questions, then communicating your message via a large screen is likely to benefit your business. However, how do you know if you should invest in a video wall instead of using a projector or putting up a large single display? Working through the checklist to the right will help you find out. Answering just one question with YES can be reason enough to invest in a video wall.

	YES	NO
1. Is the space you have in mind subject to weather?	☐	☐
2. Is the space affected by bright light?	☐	☐
3. Does the screen need to be larger than a single display or of custom size and/or shape?	☐	☐
4. Do you want a large seamless appearance or a curved display?	☐	☐
5. Do you want the flexibly to change the content that is shown at a moment's notice?	☐	☐
6. Do you need to show complex information from multiple sources or feeds, such as in an operation centre for transport or emergency services and security?	☐	☐
7. Do you need a solution that has a long lifespan and is easy to service and maintain?	☐	☐

Video Walls are the ideal solution for all of the above scenarios – whether just one applies to you or all.

LED vs LCD vs projectors

Once an organisation has decided that a large screen would likely be a good investment, the first question to consider is whether an LED or LCD solution is best, or if a traditional projector is sufficient in the specific situation. All have unique advantages, as the table to the right shows.

	LED	LCD	PROJECTORS
Aesthetics	• Large seamless display • Curved displays are possible • Custom shapes possible	• Multiple "standard TV" style panels resulting in visible lines between them • Curved displays are not practical • Custom shapes are limited to panel sizes	• Large seamless display • Curved displays are possible (however image will be distorted unless expensive mapping software is used) • Custom shapes can only be achieved with complex blending
Indoor/ outdoor usage	• Can be completely weatherproof and suited to all outdoor and indoor environments	• Indoor only unless in a custom enclosure • Needs a dry environment	• Projector needs to be indoor or in custom enclosure • Image could be outdoor but highly affected by ambient light
Typical lifespan (running 24/7)	• 7 - 10 years	• 3 - 5 years	• Lamp projector less than 1 year per lamp • Laser projector 2-3 years per laser engine
Repairs	• Individual pixels/modules can be easily repaired or replaced	• In case of damage or failures, the entire LCD panel needs to be repaired or replaced	• In case of damage or failures the entire projector needs to be repaired or replaced • A lamp replacement can be actioned quickly if appropriate spares are kept
Maintenance	• More robust and less sensitive to extreme weather conditions • Easier, on-site repairs and maintenance • Serviceable from the front	• Repairs and maintenance can be more complicated usually requiring removal from mounting location and opening of device	• Repairs generally require projector to be removed from site • Maintenance may include cleaning filters, changing lamps, realigning and refocusing of closed lens
Resolution	• Lower resolution when viewed up close subject to pixel pitch • Select pixel pitch dependant on viewing distance • High resolution not as important for large displays when viewed from large distances	• Offers higher resolution, which is important when small details need to be clearly visible from a close distance	• Offers higher resolution, which is important when small details need to be clearly visible from a close distance
Brightness	• Better brightness and no reflections	• Generally lower brightness • Some reflection cannot be avoided due to the glass frontage	• Generally much lower brightness • Brightness decreases quickly as image increases • Projection surface required to maximise brightness and produce more accurate colours
Contrast level	• High contrast	• Can be high contrast	• High optical contrast, actual contrast dependant on surface and is inversely proportional to brightness
Power consumption	• Often more energy-efficient display with less heat. • Power consumption is directly related to content	• Uses more energy	• Often more energy-efficient display with less heat
Upfront buying cost	• Often higher upfront costs (but longer lifespan and lower maintenance cost)	• Often lower upfront costs (but shorter lifespan and higher maintenance cost)	• Often lower upfront costs (but shorter lifespan and higher maintenance cost) • If attempting to match brightness & features upfront costs may even be higher

LED vs LCD vs projectors summary

In summary, LEDs are often the best choice given that they match or outperform projectors in almost all areas and considering that the two areas in which LCDs seem to win at first glance are generally less significant after closer consideration. While LCD screens offer higher resolution per square metre, this becomes irrelevant when looking at large displays that are to be viewed from a distance. A good rule of thumb is 3m for every mm of pixel pitch. A standard 55" full HD television has a pixel pitch of 0.63mm and thus looks good from as close as 1.8m. Any closer and the individual pixels start to become visible. A 2.5mm pixel pitch video wall looks good from a little over 7m (a full HD image with this pixel pitch would be around 5m wide and 3m high).

The fact that LCDs require a lower upfront investment might be tempting, but this cost-benefit often disappears when calculating the total cost of ownership given that LEDs have a longer lifespan, are more energy-efficient and generally result in lower maintenance cost. Nevertheless, there are some use cases where LCDs are the better option, for example, when the display resolution for close viewing is important.

Projectors can also seem tempting on face value, however to achieve equal brightness, or features such as curved surface projection, the initial cost may be higher than a video wall and continuing maintenance such as laser engine or lamp replacement need to be factored in. However, in a dimly lit space brightness may not be an important feature.

If you're still unsure which display type is better for you, have a chat with an experienced supplier. They can review your specific requirements and recommend the best solution.

How to identify best-in-class video wall solutions

Regardless of whether an LED, LCD or a projector is the solution of choice, businesses must know how to identify best-in-class solutions to ensure a good return on the investment. Here are three key things to look out for.

- **Are the products proven and trusted?** Caution is advised with new products and brands even if they are more affordable. You might pay the price in high repair and maintenance cost later.
- **Is local support available?** Is local support available? Make sure there is an experienced and trusted team to help service and maintain the video wall and to ensure it delivers the most value for years to come.
- **Compare ALL specifications.** Some solutions will have a tight pixel pitch (and high resolution), but this can come at the cost of brightness. Some might have a lower refresh rate which can cause blurring when viewed while moving, and some may be overbearingly heavy. All of these issues can often be seen with lower quality products.

Overall, video walls are a great way to engage and inform your audience. And with the right research, products and partner, they are likely to deliver an excellent return on investment for years to come.

Seamless collaboration with web-conferencing

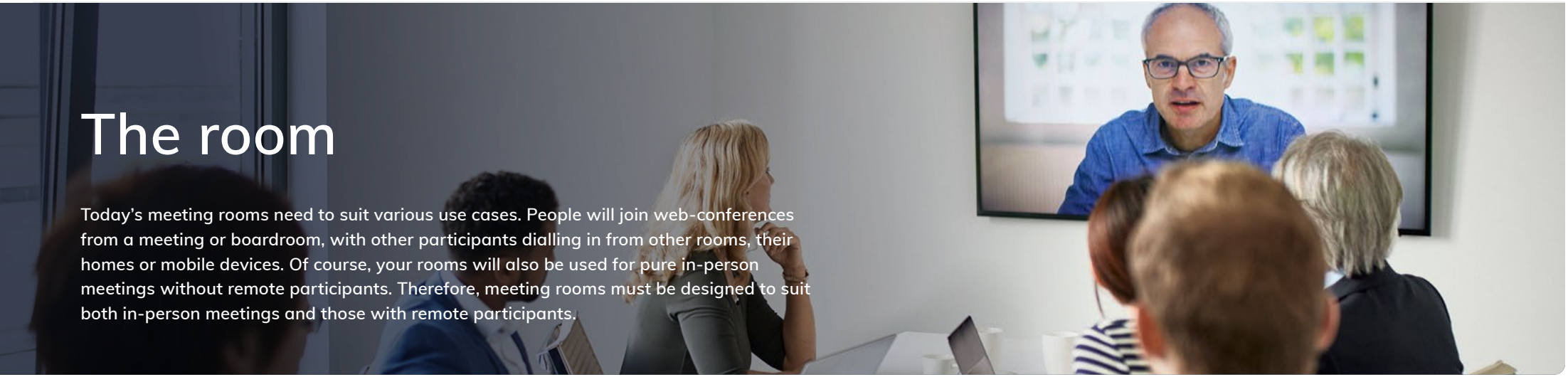
Did you know that web-conferencing really can be as simple as clicking a button?

Web-conferencing has become increasingly popular, replacing the video conferencing systems of recent times, which relied on dedicated hardware. There is now a plethora of web-conferencing solutions that provide simple one-click meetings with screen sharing and instant messaging, along with other collaboration tools. Although this has simplified some aspects of online conferencing and made running meetings from remote locations more feasible, it has caused complications in the standard meeting room environment.

In the past, video-conferencing specialists were often engaged to help with the design of meeting spaces and the installation of hardware to make collaboration with remote parties possible.

Now that the conferencing device is a PC, we're seeing a worrying trend of businesses purchasing USB microphones and cameras for all of their meeting rooms without any consideration as to their suitability for the space, or even the space's suitability for web-conferencing. This often leads to poor sound and video quality and frustrated employees when the technology is not working as they need it to.

Organisations that want seamless web-conferencing solutions that help their staff be more productive and collaborate effectively, need to consider four critical factors when deciding how to approach the creation of a conferencing space.



The room

Today's meeting rooms need to suit various use cases. People will join web-conferences from a meeting or boardroom, with other participants dialling in from other rooms, their homes or mobile devices. Of course, your rooms will also be used for pure in-person meetings without remote participants. Therefore, meeting rooms must be designed to suit both in-person meetings and those with remote participants.

Is the lighting right?

Lighting is vital to engage remote participants, and also needs to be designed to provide a comfortable working environment for those in the room.

- Avoid lights or windows facing the camera as well as shadows from single-source lighting on participants.
- Think about the location of the camera in the room and make sure there is a way to cover windows.

Is the room layout appropriate?

Another aspect to consider is the room layout and the placement of furniture, displays, cameras and microphones.

- Position the display and camera at the opposite end of the room to the entrance doors to reduce interruptions from late participants.
- Install the display and camera on the short wall in rectangular rooms to allow participants on both sides of the table to face the camera.
- Avoid circular and square tables – unless multiple cameras are to be used. Rectangular, oval or u-shape arrangements work best for most spaces.

Are the acoustics right?

Getting the acoustics right is important to ensure the room makes for a comfortable, collaborative environment. Reflective surfaces, especially glass, timber and concrete, often cause problems with speech intelligibility. Irregular shaped rooms generally have better acoustics than square rooms.

- Use carpet and acoustic tiles instead of glass, timber and concrete.
- If reflective surfaces are unavoidable, try and make the opposite wall absorptive.
- Avoid concave surfaces as they exacerbate acoustic problems.

Is the wall colour appropriate?

Finally, it's a good idea to think carefully about the wall colour in your meeting rooms. Bright and strong colours can cause cameras to misperceive the participants, and they also make for a distracting work environment.

- Use neutral colours with sufficient tint for backgrounds.
- Avoid white as it makes it difficult to perceive details in participants. Examples of good background colours are pale slate blue, grey, tan and beige.
- Avoid glossy finishes. Matte or other low reflection finishes are recommended

Cameras

Choosing the right camera for the space is imperative for the delivery of clear and useable video to all participants. There have been some exciting developments in this area in the past year or two. However, it is easy to get caught up in the hype and pick a solution that does not suit your room. Some current technologies and their best use cases include:

CAMERA	RECOMMENDED FOR	ADVANTAGES	DISADVANTAGES
Device webcam	Meetings joined from home or at the workstation. Single participant only.	• Easy to access and use • Built-in, so no extra cost	• Generally provide poor resolution and colour • Often at an unflattering angle
Fixed in-room camera	Small huddle spaces and workstations.	• Can choose mounting position • Often lower cost than other solutions	• Generally wide-angle (creates a slightly distorted image to fit the participants in)
Auto cropping camera	Small huddle rooms to medium meeting rooms (7-8m long max).	• Merges a high definition fixed in-room camera, with AI or audio tracking to zoom in on the currently speaking participant • Provides a better experience than the fixed camera, especially for slightly larger rooms	• Poor video quality in large rooms • More expensive than fixed cameras
Pan tilt zoom camera (PTZ)	Moving camera for medium to large rooms.	• Can usually control colour, exposure, white balance etc. to provide a better image • Can be paired with a tracking system to focus on participants automatically	• More expensive than less sophisticated solutions
Multiple PTZ cameras	For boardrooms, town halls and other large spaces.	• Provides different angles or multiple camera views to show the current speaker and the whole room • Can provide a redundant camera to focus on the next speaker for quick switching	• Generally an expensive solution • Not suitable for smaller spaces as the cameras would overlap

Microphones

Getting the microphone setup right is even more important than the camera setup. People can participate in a meeting without being seen, but not without being heard. As with cameras, there are multiple options to choose from, each with their unique advantages and disadvantages.

MICROPHONE	RECOMMENDED FOR	ADVANTAGES	DISADVANTAGES
Built-in device microphone *(e.g. laptop, smartphone, tablets)*	Never the best solution. Should only be used when no other option is available.	• Easy to access • Built-in, so no additional cost	• Low-quality sound • High background noise
Headphones with built-in microphones	For single participant meetings at a workstation, home or from a mobile device.	• Low-cost solution • Better sound quality than built-in device microphones	• Single participant only
Table microphone	Where a cabled microphone can be used on a table, positioned close to participants. Can come in: 1. Omnidirectional: Picks up 3-4 people on a round table. 2. Cardioid: Somewhat directional. Picks up 2-3 people. 3. Hypercardioid: Very directional. Picks up one person only.	• In-table options can automatically rise out of the table for a conference • Wireless options are available for roaming and re-configurable tables	• Can suffer from contact noise (thumps) and unintended noises such as paper rustling
Ceiling microphone	Medium to large spaces where the ceiling can support a microphone.	• Unobtrusive, either hanging or fixed to the ceiling	• Further away from participants, so suffers more from room noise/ reverberation • Often omnidirectional, but room noise and reverb can be battled by using multiple microphones with directional patterns

Boost your microphone with beamforming technology

When a standard microphone solution is not good enough, beamforming technology can be employed in newer ceiling, table and all-in-one sound bar microphones. This technology can be expensive, but it is very effective. Beamforming technology utilises multiple microphones in an array to steer pick up patterns and deliver better sound quality. Some beamforming technologies can even be used to trigger auto-tracking cameras to locate speakers.

All-in-one sound bar beamforming solutions are useful for small to medium rooms while table microphones with beamforming technology are a great option in spaces where the ceiling won't support a microphone. However, beamforming technology in ceiling microphones is the ultimate high-end solution as the majority of room noise and reverberance is removed from the audio signal. Therefore, this is an excellent solution for medium and large spaces, as well as those with poor acoustics.

Speakers

The right speaker setup is just as important as the microphone to ensure participants in the room can hear clearly what off-site meeting attendees are saying. In large spaces, additional speakers might be required to reinforce in-room speakers.

SPEAKER	RECOMMENDED FOR	ADVANTAGES	DISADVANTAGES
Built-in speakers *(laptop, TV)*	Never the best solution. Should only be used when no other option is available.	• Easy to access • Built-in means no additional cost	• Poor sound quality
Sound bars	Small to medium meeting rooms (max around 8m deep).	• Cost-effective • Adequate coverage in small to medium rooms	• Not the best sound quality
Front of house speakers	Medium size rooms	• Suitable for slightly larger rooms compared to sound bars • Can be used in conjunction with ceiling speakers	• Uneven sound distribution (loud at front, quiet at rear)
Ceiling Speakers	Medium to large spaces	• Even sound coverage to the whole room • Can be zoned to provide audio from local participants microphone too (speech reinforcement)	• More expensive than other solutions • Harder to install
In-table speaker	All size meeting rooms with fixed tables. A good option when ceilings are not suitable for mounting speakers.	• Excellent sound quality across the whole room • Useful when speech reinforcement or translation is required	• Requires room with fixed tables

Getting AV solutions right

Did you know that poorly selected and implemented AV technology is one of the biggest money pits for many organisations?

Regardless of whether you are thinking about implementing a video wall, a new web-conferencing solution or any other AV technology, a few small considerations can make the difference between a user-friendly, efficient solution that delivers ROI and a frustrating, underutilised money pit.

Thankfully, there are a few simple rules that, when followed, can ensure businesses get it right the first time – for today and the future.

1. Research before you buy

There is no one-size-fits-all solution when it comes to AV. What might be the perfect solution for partners or competitors is not necessarily the best option for your business. Therefore, it's important that companies take the time to get a clear idea of their specific requirements and understand what solutions are out there before investing. Leading suppliers will work through this process with you and help design the right solution for your business, so don't hesitate to reach out to potential suppliers early in the process.

2. Don't use low-quality products just to save cost

It can be tempting to try and save upfront cost by choosing low-cost AV solutions. However, caution is advised. While some products are both high-quality and inexpensive, the reality is that, more often than not, quality suffers when the price goes down – and that means high repair and maintenance cost later on, not to mention the frustrations and headaches when things don't work. To get the best ROI out of their AV solutions in the long-run, organisations need to consider not only the upfront cost but also the entire lifecycle cost of ownership. Often, what looks most expensive at first glance ends up being the cheaper option in the long-run.

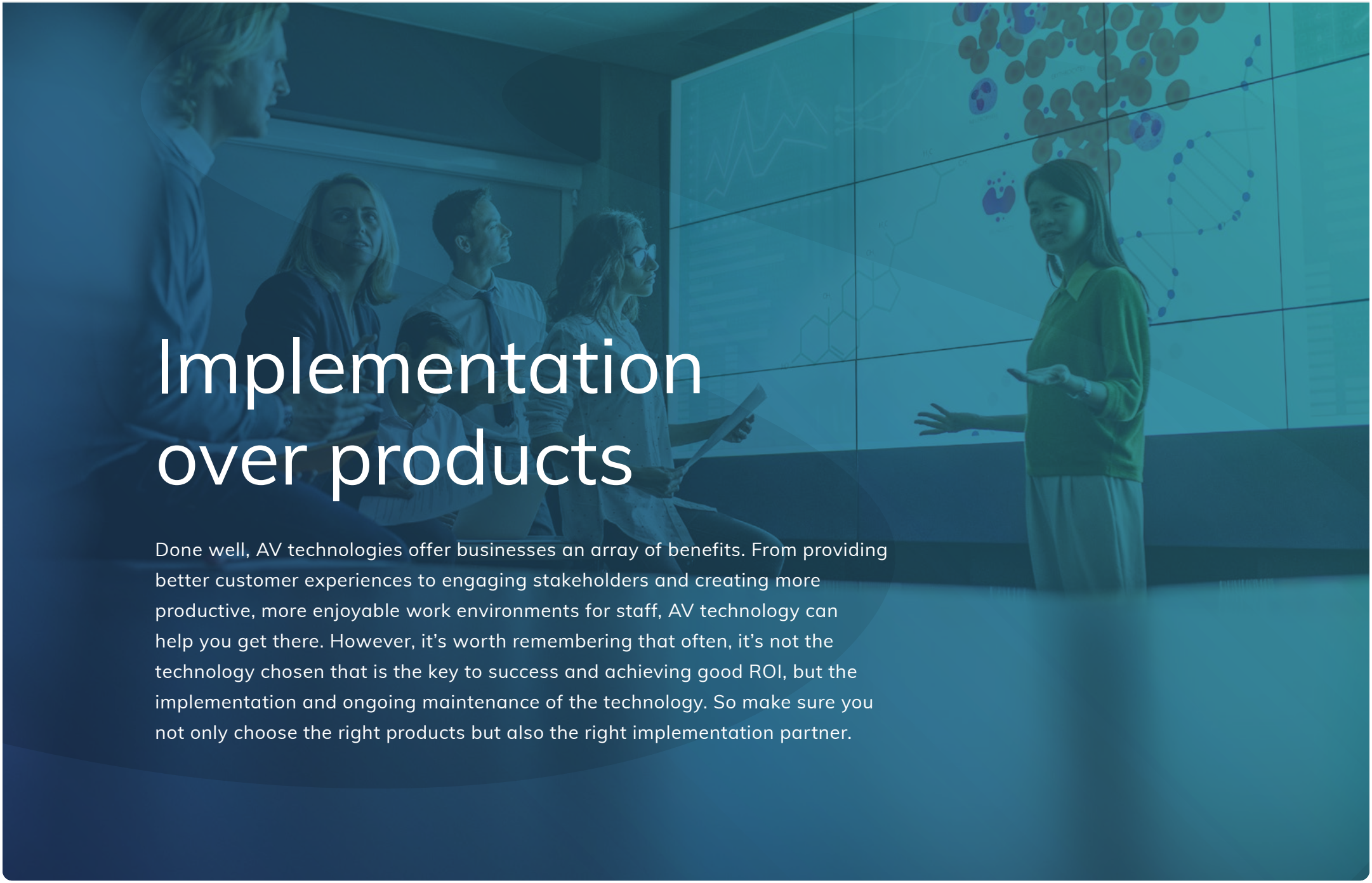
3. Choose the right supplier

AV solutions are rarely just a one-off transaction. Even the best and most robust technologies will need some maintenance over time, and new developments might mean you want to upgrade and enhance your solution over time. Therefore, selecting the right supplier is critical to the long-term success of AV implementations. Choose a supplier with a proven track record for solutions such as the ones you need. Also, make sure you select a partner who not only delivers a high-quality solution but one who can also provide ongoing maintenance and support.

4. Future-proof your business

These days, technology, as well as the general business environment, changes quicker than ever. Even the most innovative solution today is likely to be out-dated in a few years (if not months) and your requirements and use cases for AV technologies will change as your business evolves. Make sure you consider this when you select your AV solutions. Some questions you might want to ask yourself include:

1. How might you want to use the technology 12-36 months from now?
2. How might your business change (location, employee count, flexible working arrangements, etc.)?
3. What are the ongoing maintenance and service needs and costs?
4. What is the longevity of the products used?



Implementation over products

Done well, AV technologies offer businesses an array of benefits. From providing better customer experiences to engaging stakeholders and creating more productive, more enjoyable work environments for staff, AV technology can help you get there. However, it's worth remembering that often, it's not the technology chosen that is the key to success and achieving good ROI, but the implementation and ongoing maintenance of the technology. So make sure you not only choose the right products but also the right implementation partner.

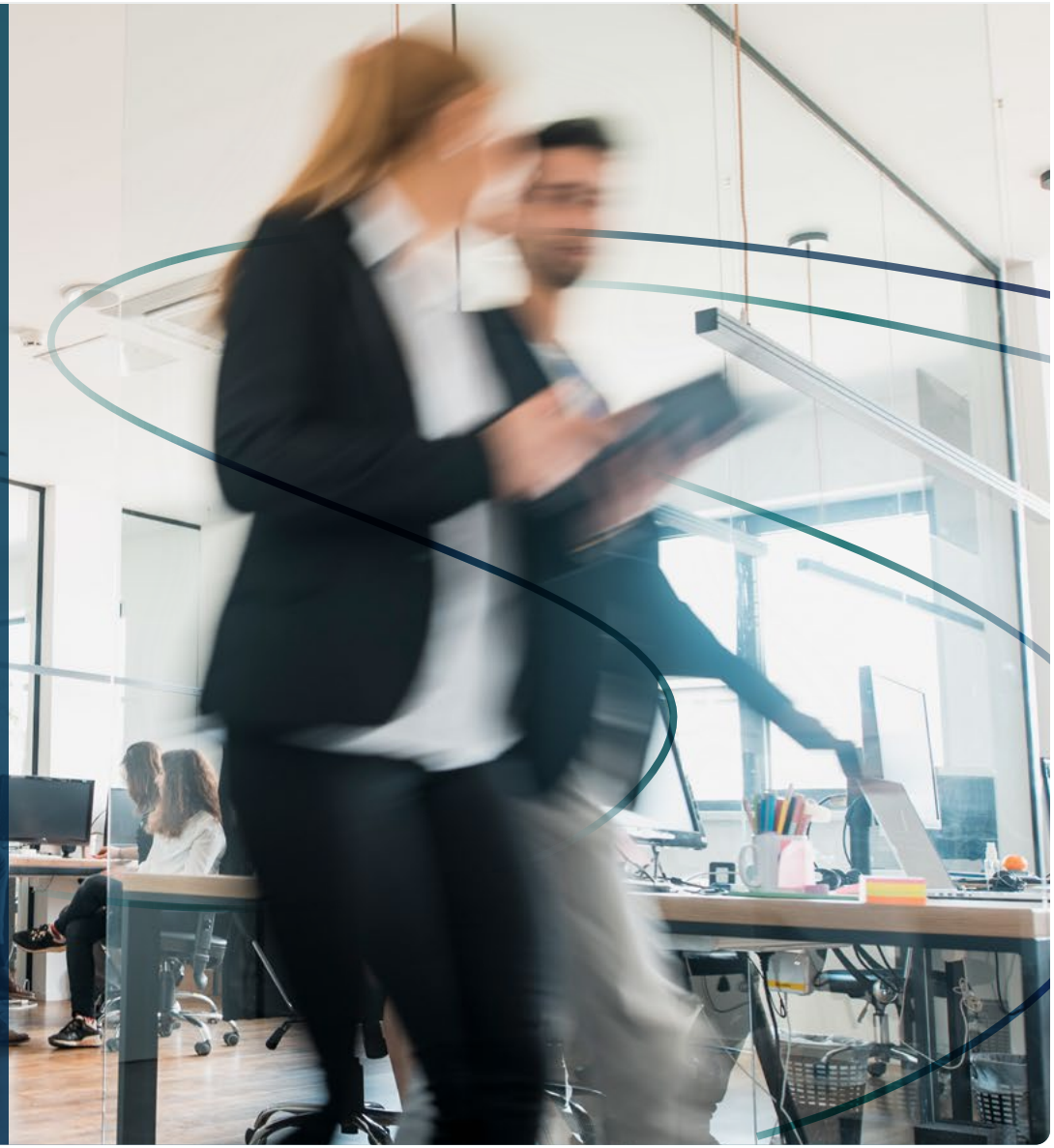
Talk to us to learn more

At Syndeticom, we have been delivering mission-critical digital infrastructure since 1992.

AV Technologies, like video walls and web-conferencing, as well as others, are among our areas of expertise. We have worked with small and large organisations across Australia to help them get AV right and get their messages across - on big and small screens. In other words, we have the experience and the product to deliver the best-of-class AV solutions you need.

Get in touch with us today to learn more and discuss your requirements.

GET IN TOUCH



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