This research was supported under the Australian Research Council’s Linkage Grant funding scheme (2008-2010), project number LP0776248. The project, *Gateways to Justice: improving video-mediated communications for justice participants*, was led by Professor David Tait (University of Western Sydney). The team members are listed below.

**Chief Investigators:** David Tait, Chris Lennard, Gregory Missingham, Jane Goodman-Delahunt, Terry Carney, Deborah Blackman, Greg Battye, Alice Richardson, Graham Brawn.

**Industry Partners:** The Department of Justice (Victoria), The Department of the Attorney General (Western Australia), The Australian Federal Police, The ACT Director of Public Prosecutions, ICE Design, Jumbo Vision, PTW Architects and Production Audio Services.

**PhD Candidates:** Emma Rowden and Anne Wallace (Australian Post-graduate Award Industry scholarship recipients)

The authors would like to thank all of those who agreed to be interviewed, and the various administrators and staff who facilitated our inspections of courts and remote facilities. We would also like to thank key representatives of our Industry Partners: The Hon. Justice Richard Refshauge (Supreme Court ACT; formerly ACT DPP) and Jon White (ACT DPP), Mark Hanson (ICE Design), Ray Warnes (The Department of the Attorney General, WA), Lena Kimenkoski (Jumbo Vision), Dr James Robertson (Professorial Fellow, UC; formerly AFP), Graeme Stevenson (Production Audio), John Griffin (formerly with Department of Justice, Victoria), Diane Jones (PTW Architects; Adjunct Professor BE UNSW), Dr Kate Auty (Commissioner for Sustainability, Victoria; Adjunct Professor, La Trobe University).

The experiment conducted as part of this research was made possible through the generosity of the Victorian Department of Justice, the owners of the County Court of Victoria (The Liberty Group) and the contributions of industry partners PTW Architects and ICE Design. Particular thanks are due to the judiciary and staff of the County Court of Victoria: Peter Anderson (The Liberty Group), David Hoy (In Court Technology Manager), Rudy Monteleone (Victorian Juries Commissioner), Margaret Jones (Office of the ACT Director of Public Prosecutions) and Alastair Ross (National Institute of Forensic Science). Thanks also to our wonderful experiment support crew:

Judy Crabb, Dhruti Parekh, Rebekah Lee, Marcela Mora, and Adriana Calderon. The project team especially wish to acknowledge Diane Jones (PTW Architects), Mark Hanson and Rod Louey-Gung (ICE Design) who dedicated so much of their time in assisting us with the experiment. The project team would also like to acknowledge the work of Esther Duffy, Rosheen Meagher, Tamara Donnelly and Ingo Kubic as project managers.

**How to cite this publication:**

**A note on printing:**
This document has been formatted to print A4, landscape, double-sided with short-edge binding.

**COVER IMAGE:** Remote Witness in Enhanced Condition, as seen from the prosecutor’s perspective in the courtroom - taken during the Gateways experiment in the County Court of Victoria, August 2009 (© Emma Rowden).
While courts are conservative institutions, and that is often justified, they are not immune to changes in society, nor should they be. In particular, we have seen in recent times the significant developments of technology used to enhance the delivery of justice by courts in many ways.

Indeed, the introduction of modern forms of technology into courtrooms has been one of the most significant changes in courts in recent decades. None of these technologies has had a greater impact than videoconferencing and CCTV, which, as this report notes, is now widely used in courts for a variety of purposes.

This study, a partnership between justice agencies and researchers, set out to address an important issue for justice policy: how to improve the quality of participation in court processes using these technologies. As the former Director of Public Prosecutions for the Australian Capital Territory, I was enthusiastic about the project and was pleased to join it as an industry partner; other industry partners included the justice departments of Victoria and Western Australia.

Courts and justice departments have a duty of care to court users; they should ensure that people are treated courteously and their needs for information and safety are met. One group of users who require special attention are vulnerable witnesses, especially child witnesses and adult victims of sexual assault. Another such group are witnesses, defendants or accused persons who live substantial distances from the court.

Yet a further issue is caused by the increasing reliance of courts on testimony from experts, who may be based interstate or overseas. Even for those based locally, but especially for those further away, time spent travelling or waiting in court is time not spent on processing other cases or dealing with clients or patients for those experts who are not full-time forensic experts. Reducing this time can save costs for parties as well as minimising disruption to busy practices and those they serve.

There are also concerns about implications for cost, safety and security associated with transporting defendants to and from courts for preliminary hearings or bail applications.

To provide more effective and less disruptive participation in court processes by vulnerable and expert witnesses, as well as prisoners or protected witnesses, remote facilities are now being provided to allow their participation without the need to enter the courtroom physically. These facilities may be purpose-built, that is, designed specifically for that purpose, or they may have uses beyond providing an entry point to the court via videoconferencing.

This research reveals that remote participation facilities have often been sub-standard – cramped, cluttered, uncomfortable and not conducive to providing an appropriate environment for the remote participant. Video technologies have often been inadequate, with restricted vision and sound both for the court and the witness and limited eye-contact. Court processes have not always adjusted to video technologies, with inadequate preparation of witnesses and insufficient orientation for the remote interaction.

The Gateways study developed ‘enhanced’ processes and environments for remote witnesses and, in an experimental situation in the Victo-
rian County Court, measured the impact of any change on both witnesses and ‘jurors’.

Having experience as both a litigator and now as a judicial officer, I am very aware of the importance of this study and the value of its outcomes to courts struggling to address the need to make best use of the available technology.

The set of guidelines presented here provides detailed recommendations about how to use remote witness facilities more effectively in court processes. Proposals in these guidelines include: making remote witness rooms more comfortable, with access to natural light and visual relief; improving eye-contact between the remote participant and the person with whom they are speaking in the court; providing different views of the court for vulnerable and expert witnesses; and providing a second channel for display technologies. This document provides a valuable resource for those developing new courts, such as those in the ACT.

The guidelines also suggest that, while improving the technology and environment will result in improved outcomes for remote participation, courts will get even better value out of investments in infrastructure when court processes are adapted to change the way remote participants are oriented and introduced to the courtroom.

I strongly endorse the guidelines and recommend that courts, other justice agencies, justice departments, architects, planners and all involved in the administration of justice through the court system pay careful regard to them and the implications they have for a healthier justice system and courts that better meet the needs of those required to participate in it, often not of their own wish.

This research most successfully brought together scholars from many different disciplines. It resulted in the successful completion of two doctoral theses: Dr Emma Rowden in Architecture and Professor Anne Wallace in Law. Its undoubted success was also very much dependent on the contributions of many judicial officers, court administrators and court staff, who donated time and expertise to contribute as participants in the research.

For my part, it was a fascinating, educative, eye-opening and very satisfying experience.

I thank very much all of the participants for the valuable contribution they made to this project and through it, hopefully, to a better justice system.

The Honourable Justice Richard Refshauge
Supreme Court of the ACT
20th March 2013
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appendix a: table of australian legislation enabling remote participation
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appendix c: guidelines for selecting multipurpose remote spaces for court appearances
appendix d: suggested proforma for collecting data on videolink use
1. executive summary

Introduction
This report details the findings and recommendations of a three-year Australian Research Council Linkage Project *Gateways to Justice: improving video-mediated communication for justice participants* (2008-2011; LP0776248) led by Professor David Tait of the Justice Research Group, University of Western Sydney. This project set out to investigate whether the use of videolinks1 in justice settings was achieving its objectives and to make recommendations to improve its use, with a particular focus on the use of videolinks to take evidence in court.

This study found that current practices do not necessarily ensure that the benefits promised by new technologies are being realised to their full extent. As courts are recognising the need for a holistic approach in other areas of their operations, this report confirms that the use of this technology should be considered within a framework that includes:

- The legislation guiding its use;
- The built environment in the courtroom and in the remote location;
- Court processes, protocols and rituals;
- Training regimes provided for courts staff, lawyers and judicial officers;
- The design and configuration of the videolink technology itself.

This research found that remote court participation is more likely to be successful if each of these elements are designed to complement one another.

Videolink Use In Australian Courts
Moves towards increasing use of videolink technologies and remote participation in court proceedings need to be viewed within the following institutional policy context:

- The shift from an institutional framework to a service-provider model;
- Efforts to make courts more accessible;
- Increasing diversity and specialisation of court types; and,
- Increased concern about security.

---

1 ‘Videolinks’ is a term used throughout to encompass both Closed Circuit Television (CCTV) and videoconferenced enabled video-mediated communications. See glossary for further information.
The use of videolinks has expanded considerably from their original purposes: to allow vulnerable and child witnesses to give evidence remotely during a trial and to link defendants to the court from prisons. Videolinks are now used for a multitude of other purposes that are detailed on pages 21-2 of this report, and the range of uses seems to be continually expanding. However, perhaps surprisingly, our research found that courts generally do not keep systematic records of videolink use.

**The Gateways to Justice Project**

The *Gateways to Justice* Project had four aims:

1. To describe how the social, technological and built environments of remote witness facilities affect the experience of justice participants.
2. To identify the factors that produce a greater sense of presence for users of remote witness facilities and facilitate more effective communication between them and participants elsewhere.
3. To measure the impact of selected changes in the design and use of remote witness facilities on a sense of presence and quality of communication.
4. To develop best practice guidelines for the most effective use of remote access facilities in the administration of justice.

These aims were to be met by the three main research questions:

1. How are video communication facilities currently used for justice purposes?
2. What is the relative impact on presence and quality of communication of upgrading the technological environment of video communication facilities, the social and built form environment, and both of these together?
3. How can video hearings be introduced into regular justice processes in a way that best promotes effective communication and sense of presence?

**Methods**

To ensure robust findings, data was collected through a variety of different methods. The methods and the key findings they produced are summarised below.

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**a) LITERATURE REVIEW**

Different types of information and research surrounding videolink use in courts were analysed. These included criminological studies of videolink use in courts, government reports, academic commentaries, and literature from the disciplines of media, communications studies, architecture, design and environmental psychology.

**Key findings from the literature review:**

- Most studies of videolink use in courts address questions from within a single disciplinary perspective;
- Architectural perspectives and other analyses of the design of remote spaces are lacking, particularly regarding what features constitute ‘healthy’ environments that promote wellbeing and improved human performance;
- There is a focus on its use for witnesses and defendants as opposed to other users, such as the remote expert or the remote judge;
- The ritual elements of courtroom experiences, including establishing distances, recognising hierarchy and being ‘on show’ were recognised in the commentaries, but were insufficiently recognised in the experimental studies and evaluations;
• Studies from the disciplines of media and communication studies can be helpful in identifying features of technology-mediated communications that may contribute to their effectiveness for particular tasks.

b) ANALYSIS OF LEGISLATION AND CASE-LAW
Legislation in all Australian jurisdictions permits remote participation for a range of purposes, including giving evidence (both for witnesses deemed vulnerable and those who are not) and linking defendants in custody to courts. A review of legislation enabling remote participation in all Australian States and Territories was conducted for this project (see Appendix A), as well as international practices (e.g. EU and the USA). Subordinate legislation was also examined, as well as court rules and practice directions. Case-law from all Australian jurisdictions that interpreted and applied these provisions was also analysed to ascertain to what extent courts were requiring performative standards to be met when permitting the use of videolinks.

Key findings from legislation and case law:
• Although some attempts at uniformity are recognizable, particularly in the case of interstate witnesses, statute law appears to have developed on a fairly ad hoc basis.
• There is no complete and comprehensive legislative provision for the use of videolinks in courts in any Australian jurisdiction;
• There is a presumptive use for vulnerable and child witnesses;
• Approaches to participation by defendants vary;
• Judicial officers have broad discretionary powers in relation to the use videolinks;
• Only some operational issues are addressed in the legislation;
• Legislation, court rules and practice directions include little in the way of performative standards;
• Legislation, court rules and practice directions include little in the way of performative standards;
• There is limited attention to technical standards;
• Case-law reveals that discretionary powers to impose conditions appear to be under-utilised;
• Unlike some overseas jurisdictions, there is a lack of detailed guidelines to help guide decision-making processes.

c) SITE VISITS
The research team analysed sites involved with videolinked court proceedings in over 40 courthouses and 20 remote sites. Researchers collected data on a range of spaces that a remote participant might experience. They documented the quantitative elements (such as room size, number of windows, location proximate to other places in the building, the physical arrangement of furniture, the items of technology present), as well as more qualitative elements (such as the quality of finishes, the quality of the technology, the ambience of the room, and the extent to which the technology had been integrated into the built fabric).

Key findings from site visits:
• There are a diverse range of types, sizes and scales of spaces used for remote court participation, some of which are used solely for videolinks to courts, others of which are used for other purposes when not linked to court;
• Many remote facilities could be described as ‘unhealthy’ spaces when examined from the perspective of the environmental psychology literature that describe spaces promoting wellbeing;
• Remote spaces are generally small, bland and anonymous in character;
• Remote rooms often lack access to natural light and views;
• The videolink equipment dominates the design;
• The videolink equipment is not well integrated to the built environment, often appearing on a moveable trolley;
• The remote participant generally has limited views of the courtroom onscreen;
• There are often difficulties viewing documents over the link.

d) OBSERVATIONS AND EXPERIENCES OF REMOTE PARTICIPATION
The research team observed remote and discrete courtroom settings. Observation findings revealed discrepancies between the legislation and practice notes describing how remote participation should occur, and what was happening in practice.

Key findings from observations and experiences:
• The image of remote participant is often distorted;
• There are difficulties with simulating eye-contact;
• There are difficulties displaying multiple images;
• There is often an unnatural dislocation of the sound of the voice from image of speaker;
• Audio quality is often poor with voices sounding unnatural and lacking in clarity.

e) SEMI-STRUCTURED INTERVIEWS
Interviews were conducted with 61 stakeholders, including judicial officers, lawyers, court staff, expert witnesses, remote court officers, court administrators and architects experienced in court buildings.

Key findings from semi-structured interviews:
A diverse range of opinions were expressed, but overall, videolinks were seen as a positive step. Where concerns were voiced, they focused on:
• The adequacy of the environmental and technological conditions of the remote space and videolink;
• The effect of the perceived “remoteness” of the remote participant on the impressions of that person formed by the jury;
• The ability to assess credibility and the capacity to confront the remote participant;
• The effect of appearing from the remote space on the behaviour of remote participants, feeling that this often led remote participants to act in a manner out of keeping with a courtroom setting;
• The practice of sentencing by videolink resulting in a loss of impact on the defendant and the wider community.

f) THE GATEWAYS EXPERIMENT
This was a controlled experiment designed to test the relationship between some of the variables that had been identified as having the potential to impact on the success of video-mediated encounters. It focused on one particular type of encounter: between the witness (expert or non-expert) and the courtroom participants who receive their evidence (lawyers, judicial officers and jurors).

Four conditions were tested, including one control condition. The control condition involved a ‘standard’ environment and ‘standard’ process (BB) and the three experimental conditions were: enhanced environment and enhanced process (AA), standard environment and enhanced process (BA), and enhanced environment and standard process (AB). Participants included 170 mock jurors, 64 lay witnesses and 21 expert witnesses.
Witnesses viewed a short extract from a film showing a shooting incident, and they were then escorted to the remote witness room. Jurors observed the four remote witnesses giving their testimony, representing each of the four conditions. The responses of both witnesses and jurors to these conditions was measured from their responses to questionnaires administered at the conclusion of each witness’s testimony (see pages 33-34 for more details on methodology).

**Key findings from the experiment:**
- Improving the process (that is, the way the remote participant is informed, supported and orientated to the courtroom) has a positive effect, and improving the environment has a positive effect. However, improving both has a compounding effect;
- The quality of the environment of the remote space is noticed by those in the courtroom;
- Improving the quality of the videolink technology is noticeable by those in the remote space and the courtroom;
- Improved technology and environment in the remote space indicates an improved interaction with those in the courtroom.

**Synthesis of the findings**
The study had two major findings: Firstly, the way in which videolink technology is implemented has a real impact on service delivery, and therefore justice outcomes; how videolinks are used, their design and operation, matters.

Secondly, a successful videolinked court encounter requires careful consideration of the technology, environments, personnel, protocols and legislation that enable their use. These factors work together and none of them should be ignored or viewed in isolation. The type of the remote participant, the reason for their remote participation, and the nature of the remote space from which they appear, are key factors in determining the way in which these components should be configured to achieve the best result.

**Types of remote participants**
We identified nine main categories of potential remote participants:
1. Lay witness
2. Vulnerable witness
3. Expert witness
4. Defendant
5. Judicial officer
6. Lawyer
7. Public gallery
8. Media (press gallery)

In the operational and design guidelines we identify the recommendations that have more specific relevance to a particular type of participant where appropriate.

**Remote for access, remote for separation**
Reasons for participating remotely may also be defined as either:
1. **Remote for providing access:**
   - giving evidence
   - for appearing (e.g. remote defendant)
   - attending (e.g. family in remote location)
   - presiding (remote judge)
   - advocating (remote lawyer), or,
2. **Remote for providing separation:**
   - giving evidence (vulnerable or protected wit-

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**Rowden (2011): 67. Full bibliographic details of all references can be found in the “selected bibliography”, page 91.**
ness)
- attending (parties in conflict, disruptive defendant).

**Types of remote spaces**
Remote Spaces can be classified according to whether or not they are used for other purposes, or, whether they are used solely for videolinks. They are either:
1. **Dedicated remote facilities**: These are generally purpose-built remote rooms and associated spaces that are only used for videolinks and are not used for any other purpose. Examples of this type include the Remote Witness Facility within or attached to a courthouse, or a videoconferencing room in a prison, or,
2. **Multipurpose remote spaces**: These spaces are only occasionally linked to the courtroom. For instance, our study found that a remote court participant might find themselves in settings as varied as a hospital chapel or tea room, a business centre videoconference room, a university office, a multifunction meeting room, or a room that doubles as a storeroom.

**Assistance to the remote participant:**
We identified two different types of remote appearances:
1. **Assisted appearances**: some remote participants are accompanied by a remote court officer, or other support person (e.g. child witnesses; defendants appearing from prison). The remote court officer operates the technology and may provide additional information about the court process to the participant, or,
2. **Unassisted appearances**: some remote participants are alone in the remote space (e.g. most expert witnesses) and have the responsibility for accepting the videolink call, and setting up the room beforehand.

**Two rooms in one: what the court sees and what the remote participant sees**
Any remote space can be seen as divided in two:
Remote Room a = what the remote participant sees of the space (when seated); and,
Remote Room b = what the court sees of the remote participant and the remote space (Figure E1).

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3 Rowden (2011): 332 & Appendix H.
Recommendations
Our recommendations are configured around four stages of “the remote court encounter”:

1. **Prior**: What happens before the day of the court appearance;
2. **Thresholds**: A threshold is the transition between one state, or place, with another. This stage refers to what occurs at the remote space on the day of the court encounter. Thresholds may be crossed multiple times and at several points during a remote appearance. They may take the form of a physical threshold (moving in and out of the remote room), as well as a technological threshold (connecting and disconnecting the videolink to the court).
3. **The Encounter**: What occurs over the course of the videolink; and,
4. **Afterwards**: What occurs after its conclusion (both short-term and longer-term actions).

Our recommendations and design guidelines identify and address key issues that arise at each stage, and are either to do with suggested changes to the **process** (addressing court protocols, procedures and administrative matters), or the **design** (addressing the technological and environmental conditions) of the videolink.

**General Recommendations**:
- The court should consider the nature of the evidence to be given (traumatic personal evidence versus non-controversial and non-personal evidence) when considering additional support.
- All vulnerable witnesses should be assisted, as the additional cognitive load caused by the operation of the technology can cause undue stress.
- Unassisted remote witnesses may require additional checking to ensure that they understand instructions and/or what is occurring.
- Remote room b (see Figure E1 on p11) should always frame the remote participant in a way that gives the impression to those watching from the courtroom that the remote participant is being treated with dignity and respect, and that there is nothing distracting or diminishing the appearance of the remote participant.

The following tables on pages 13-16 provide a summary of key strategies to operationalise the findings of this research. A more detailed version of these recommendations can be found on pages 45-79.
summary of key strategies for improving the remote encounter

<table>
<thead>
<tr>
<th>KEY ISSUES: “PRIOR”</th>
<th>IMPROVING THE PROCESS</th>
<th>IMPROVING THE DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1 INFRASTRUCTURE AND PROCEDURES FOR VIDEOLINKS</td>
<td>• Maintain a central registry of facilities available for videolinks • Streamline the process for court permissions • Standardise procedures for booking the link and rescheduling the link</td>
<td>• Adopt minimum standards for optimum design of remote witness facilities and for selecting sites suitable for occasional links to courts (see Appendices B &amp; C) • Design technology at same time as the built environment • Fine-tune the design of the remote facilities during the commissioning stage and document optimum conditions in central registry</td>
</tr>
<tr>
<td>5.1.2 PREPARING FOR EACH VIDEOLINKED ENCOUNTER</td>
<td>• Brief the remote participant about a) what to bring with them; b) what to wear; and, c) what to expect • Test and modify the link as necessary with the remote participant prior to their scheduled appearance • Provide the remote participant with information and support on the day of their appearance • Provide orientation to the court for all remote participants • Ensure day-to-day maintenance for dedicated remote facilities and for multipurpose remote spaces • Allow for pre-and post-court videolinks as required</td>
<td>• Tailor the configuration of the videolink for each individual case • Plan for the possible need to reconfigure the technology, the courtroom and/or the remote space • Establish pre-set camera configurations for different types of remote participants • Provide capacity: - to display documents and exhibits - to display a wide variety of courtroom views - for a self-view</td>
</tr>
</tbody>
</table>
**KEY ISSUES: “THRESHOLDS”**

<table>
<thead>
<tr>
<th>5.2.1 WAITING IN SAFETY</th>
<th>IMPROVING THE PROCESS</th>
<th>IMPROVING THE DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide information for remote participant as to approximate duration of waiting time (20 minutes away; 5 minutes away; 60 seconds before appearance, etc)</td>
<td>• Provide an entry sequence that ensures safety and privacy</td>
<td>• Exaggerate the threshold through architectural features (such as lighting, change in ceiling height, change in materials, deep architraves, or colour) to help clarify the distinction between the remote court space and the waiting areas</td>
</tr>
<tr>
<td>• Provide appropriate reading material for the type of remote participant in the waiting area</td>
<td>• Provide adequate facilities in waiting areas (e.g. tea bench, toilets) with a pleasant outlook, paintings and natural light</td>
<td>• Make clear the distinction between being “in court” and “out of court” through signals and/or technology</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>5.2.2 TRANSITION FROM THE OUTSIDE WORLD TO THE COURT SPACE</th>
<th>IMPROVING THE PROCESS</th>
<th>IMPROVING THE DESIGN</th>
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</thead>
<tbody>
<tr>
<td>• Provide information and support when the unassisted remote participant needs to accept the videolink call</td>
<td>• Provide a clear signal to indicate that the remote space is ‘live’ to the courtroom, or not (e.g. On or Off signalling)</td>
<td>• The remote space should convey a sense of respect and dignity towards the remote participant and be evident to those watching from the courtroom</td>
</tr>
<tr>
<td>• Greet and welcome the remote participant to the court</td>
<td>• Create a formal atmosphere to assist the remote participant to maintain a demeanour appropriate for the court setting</td>
<td>• The view of the court should convey the presence of the court to the participant</td>
</tr>
<tr>
<td>• Check sound and vision is adequate by asking if all participants can see and hear</td>
<td>• Check the comfort of the remote participant</td>
<td>• The remote facility should be comfortable, spacious, clean and private, ideally with an outlook and natural light.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5.2.3 BEING IN COURT</th>
<th>IMPROVING THE PROCESS</th>
<th>IMPROVING THE DESIGN</th>
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</thead>
<tbody>
<tr>
<td>• The remote space should convey a sense of respect and dignity towards the remote participant and be evident to those watching from the courtroom</td>
<td>• The view of the court should convey the presence of the court to the participant</td>
<td>• The remote facility should be comfortable, spacious, clean and private, ideally with an outlook and natural light.</td>
</tr>
</tbody>
</table>
**KEY ISSUES: “THE ENCOUNTER”**

<table>
<thead>
<tr>
<th>5.3.1 PRESENTING THE REMOTE PARTICIPANT TO THE COURT</th>
<th>IMPROVING THE PROCESS</th>
<th>IMPROVING THE DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uphold presentation standards during the link, e.g. good audibility; size of participant onscreen is life-size, etc.</td>
<td></td>
<td></td>
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<tr>
<td>• If standards are not met, act immediately to rectify (including halting proceedings to follow necessary steps)</td>
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<tr>
<td>• Provide capacity for multiple views during a videolink</td>
<td></td>
<td></td>
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<tr>
<td>• Be alert for distractions and unanticipated effects</td>
<td></td>
<td></td>
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<tr>
<td>• Exert judicial control over the remote space</td>
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<table>
<thead>
<tr>
<th>5.3.2 PRESENTING THE COURTROOM TO THE REMOTE PARTICIPANT</th>
<th>IMPROVING THE PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uphold presentation standards during the link</td>
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</table>

<table>
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<tr>
<th>5.3.3 DEALING WITH BREAKDOWNS AND FAILURES</th>
<th>IMPROVING THE DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Take a broad view of what constitutes a breakdown or failure and have established contingency plans</td>
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<tr>
<td>• Encourage all participants to notify the judicial officer if modifications are required or if a breakdown has occurred</td>
<td></td>
</tr>
<tr>
<td>• Judicial officers should facilitate management of remote space, and support for remote participant</td>
<td></td>
</tr>
<tr>
<td>• Provide training for judicial officers as to the capacity of the technology</td>
<td></td>
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</tbody>
</table>

*(No design issues have been noted here as these should be addressed at other stages of the process)*
### KEY ISSUES: “AFTERWARDS”

#### 5.4.1 IMMEDIATELY AFTER THE LINK HAS FINISHED

- Define clearly when the videolink has ended for the remote participant and in-court participants
- Provide de-briefing information to the remote participant to ensure they have adequate follow-up with support person and/or their lawyer

#### 5.4.2 ONGOING

- Undertake regular reviews of videolink procedures (establish a working party)
- Obtain feedback from court users on the remote court experience
- Create regular opportunities for reflection and feedback from the judiciary, court staff and others appearing by videolink
- Maintain accurate records of both CCTV and videoconference use, as well as other platforms such as Skype, to help target improvements (see Appendix D for suggested proforma)

### IMPROVING THE PROCESS

- Regularly update the design guidelines for remote facilities and courtrooms (Appendix B), and selection of multipurpose remote facilities (Appendix C) based on feedback and recommendations of review process

### IMPROVING THE DESIGN

- Provide facilities to enable pre- and post-appearance links between remote participant and their support person and/or their lawyer (see Appendix B)
Publications arising from the research

The findings of this research have been published in a variety of different formats, and further publication is ongoing. The following is a list of publications to date that readers may find useful for further reference.


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1. executive summary
Figure 1: Remote Court Participation - this map demonstrates the different types of court users that are currently accessing court proceedings in Australian courts (© Emma Rowden, taken from Rowden, 2011: 84).
This report identifies and examines the issues associated with implementing videolinks in justice settings. It reports on the findings of a three-year Australian Research Council Linkage Project Gateways to Justice: improving video-mediated communication for justice participants. The Gateways to Justice project investigated whether the use of remote participation technology was achieving its objectives and set out to make recommendations to improve its use.

The discussion and recommendations outlined in this document are based on findings that emerged from:

a) a review of the Australian and international literature on the use of videolinks in courts;

b) interviews with stakeholders in Australia;

c) site visits to courts and videoconferencing facilities across Australia, as well as Germany, United Kingdom, Ireland, France, Luxembourg, the Netherlands, and several international courts for comparative purposes; and,

d) an experiment comparing conditions in remote court facilities.

The guidelines, set out in ‘synthesis of key findings’ (pp45-79), provide a list of actions that courts should consider in implementing remote communication technologies, with detailed specifications provided where possible. It is likely that priorities will be defined according to local needs, with some facilities providing more comprehensive services than others.

Previous approaches to analysing the use of videolink technologies in court environments have tended to take an unproblematic view of the technology. In many accounts the audio-visual equipment that enables remote participation is viewed as a tool, but not as something that necessarily changes or alters the nature of the interaction. As courts are recognising the need for a holistic approach in other areas of their operations, this report confirms that technology should be planned within a holistic framework that includes:

• the legislation guiding its use;

• the nature of the built environment in the courtroom and in the remote location;

• the extent to which the design of court processes, protocols and rituals are adapted in sympathy with the changes imposed by the technology;

• the training regimens provided for staff and judicial officers; and,

• the design and configuration of the videolink technology itself.

Our research supports the contention that with the distribution of court space by the introduction of videolinks, court rituals and protocols should be amended accordingly. In other words, remote court participation is more likely to be successful if the physical environment, the technology, court rituals and protocols are designed to complement each other, rather than assuming that existing practices will necessarily work within this new court environment.

We begin this report by examining the policy context that has given rise to the need for this research, before outlining the research project itself. A detailed synthesis of the findings is accompanied by design and operational guidelines to assist courts, and others, in implementing our recommendations. This is followed by two case studies to illustrate how these recommendations might be implemented in different settings.
3. policy context

3.1 Recent Shifts in Australian Court Policy

Shift from Institutional Framework to Service-Provider Model

The Parker report, *Courts and the Public*, released in 1998 identified a shift in the relationship between courts and their users from court-centric to a customer-centric focus. In the years since, courts have increasingly sought to measure the satisfaction of stakeholders with their court experience, and to design court facilities and processes with a more direct focus on their needs.

Making Courts More Accessible

The trend to the service-provider model has directed more attention to the needs of particular types of court users, including indigenous peoples, people who are homeless, people with drug or alcohol dependency, and victims of sexual assault or family violence. The extent to which such groups experience full access to the courts, that is, access to the full range of court facilities and services relevant to their needs, has been identified as a significant issue. There has been an increasing focus on providing better information and support to particular groups of court users, such as vulnerable and child witnesses (see Figure 2). Coupled with this is a trend towards providing more accessible court buildings and justice facilities.

Diversity in Court Types

Associated with the focus on accessibility has been an increasing trend towards specialisation that has taken several forms. There has been increasing specialisation in types of courts, and a proliferation of specialist lists and divisions within courts. In part, the impetus for this has been a desire to improve customer service by providing more efficient disposition of matters. Judicial officers who specialise in a particular case-type are empowered to actively case manage their lists, and might be expected to deliver faster and more robust outcomes. The growth of tribunals and the move to ‘therapeutic’ justice processes, such as drug courts, mental health courts and specialist courts for indigenous citizens are further evidence of this trend. In the latter, specialist expertise is intended to deliver better outcomes by contributing to long-term resolution of under-

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lying problems that result in infringement of the criminal law.

Climate of Security
As the drive for accessibility has accelerated, at the same time another, perhaps conflicting, trend has emerged. In the decade since 11th September 2001, courts, like other civic buildings, have operated in a climate of increased concern about the potential for terrorist attacks on public institutions and officials. This has heightened existing concerns about the potential security risks associated with court proceedings, resulting in the implementation of ‘airport-style’ security processes at the entrance to many court buildings in large metropolitan or suburban city areas. There have also been increased concerns about the security risks of transporting prisoners to and from courts and correctional facilities.

Australian trend towards Remote Participation
The rapid adoption of videolink technologies by Australian courts needs to be seen in the context of these developments. Their use has expanded considerably from their original purposes: to allow vulnerable and child witnesses to give their evidence remotely during a trial and to link defendants to the court from prisons. Videolinks are now used for a multitude of other purposes.

The current study found that videolinks are used so extensively in Australia that police stations, prisons and remand centres could also be considered important hubs of the network, alongside courts (see Figure 3, p22). Across the justice system, videoconferencing is now being used to:

- conduct preliminary psychiatric assessments for people in remote communities;
- facilitate meetings with legal representatives for defendants on remand;
- prepare probation reports; and,
- conduct parole hearings.

The rapid increase in frequency of use is also a product of the substantial time and monetary savings this technology affords, particularly for a country of vast distances like Australia, with some states containing many isolated and remote communities. The Chief Justice of Australia’s largest state, Western Australia, has said that videolinks have become an indispensible part of the way the justice system operates in his state.6

3.2 Enabling Legislation for Remote Participation in Court Processes: the Australian Context7
Legislation in all Australian jurisdictions permits remote participation for a range of purposes, including giving evidence (both for witnesses deemed vulnerable and those who are not) and linking defendants in custody to courts. Although some attempts at uniformity are recognizable, particularly in the case of interstate witnesses, statute law appears to have developed on a fairly ad hoc basis.

This has been a product of the differing imperatives for its use which have developed in varying temporal and geographical contexts. The use of videoconferencing to take evidence from chil-

dren, victims of sexual assault and other witnesses classified as vulnerable, has been one such imperative, and has largely sprung from law reform efforts directed to achieving better outcomes in sexual assault trials. The use of the technology to enable defendants to participate in remand, and other preliminary hearings in criminal cases, has been another driving force, prompted by concerns about costs and security risks associated with prisoner transport. The use of this technology to take evidence from witnesses located overseas, or interstate, who might otherwise not be available, or whose attendance might be prohibitively expensive, has been another.

Key findings from the analysis of legislation and the relevant case-law are outlined below in Section 4.2.b (pp26-29).

3.3. How often are videolinks used in Australian Courts?

Processes that may from time to time require remote communications include:
- to hear expert witnesses give their evidence;
- to provide interpreters;

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• to link lawyers to court to conduct directions hearings; and,
• for other case management and administrative procedures, pre-trial conferences and motions;
• bail applications;
• sentencing hearings;
• tribunal hearings;
• civil trials;
• appeals;
• mediation and arbitration hearings; and,
• jury and non-jury criminal trials.

Videolinks are also being used to provide judicial officers to regional courts. For example, to cover for colleagues who are taken ill, or to finalise outstanding matters outside of the circuit schedule.

Courts are also considering the following diverse uses including:
• multiple defendants or witnesses (some of whom may be in courts, others appearing remotely, requiring court space for both simultaneously); and,
• sick or absent jurors.

Our interviewees and our industry partners reported that their use of videolink technologies was increasing overall. However, quantifying the precise extent of the use of videoconferencing and CCTV enabled links is surprisingly difficult. Records of the use of videolinks are generally not kept in a systematic fashion in all courts. Without a systemic approach it is difficult to generalise or make meaningful comparisons between courts or jurisdictions. The best estimate we have been able to obtain indicated a usage rate of approximately 10 videoconferenced calls per day (for Victorian Department of Justice network during 2008).

Our research indicates that courts could benefit from more consistent standards of record-keeping about the use of videolinks to better inform how to best allocate resources, to pinpoint areas where the use of these technologies might be increased, or more effectively deployed, and to enable comparisons about the use of audio-visual links generally both within and between jurisdictions. In Appendix D we suggest a proforma of the kinds of data that might be usefully recorded as a starting point. Courts might wish to add other types of information to collect in order to suit their particular needs.

9 Approximate figure only, due to some inconsistencies and the lack of detail in record-keeping across courts.
4.1 Project Aims and Research Questions
The Gateways to Justice Project had four main aims:
1. To describe how the social, technological and built environments of remote witness facilities affect the experience of justice participants.
2. To identify the factors that produce a greater sense of presence for users of remote witness facilities and facilitate more effective communication between them and participants elsewhere.
3. To measure the impact of selected changes in the design and use of remote witness facilities on a sense of presence and quality of communication.
4. To develop best practice guidelines for the most effective use of remote access facilities in the administration of justice.

These aims were to be met by the three main research questions:
1. How are video communication facilities currently used for justice purposes?
2. What is the relative impact on presence and quality of communication of upgrading the technological environment of video communication facilities, the social and built form environment, and both of these together?
3. How can video hearings be introduced into regular justice processes in a way that best promotes effective communication and sense of presence?

4.2 Methods
To ensure robust findings, data was collected through a variety of different methods. A brief summary of each method, and the key findings they produced, are provided below.

a) LITERATURE REVIEW
Different types of information and research surrounding videolink use in courts were analysed. These include legal analysis of relevant case-law and legislative provisions, criminological studies of their use, government reports, academic commentaries, literature from the disciplines of media and communications studies, and literature from the disciplines of architecture, design and environmental psychology.

Most of the empirical research and evaluations conducted to date have focused on the introduc-
tion of CCTV for child and vulnerable witnesses, centering on its impact upon the remote witness and the reception of their evidence. There have also been studies on the use of videoconferencing to allow defendants to appear remotely. Some of these studies have been undertaken in relation to pilot projects, and have taken the form of reports to the courts or justice department; others have been undertaken by way of independent research. While academic commentators have discussed and analysed the use of videolinks from a variety of theoretical perspectives, the existing literature generally focuses on the effects of videolinks on performative and power relations in the courtroom, and the rights of the accused. Broadly speaking, commentators fall into two classes: those who see technology as offering ways to improve justice processes, and those who portray the intrusion of technology as a destabilising influence that will operate to the detriment of the adversarial trial process.

KEY FINDINGS FROM THE LITERATURE REVIEW:
• Difficult to compare between studies: Differences in content, context and methods make it difficult to compare results and findings across existing studies.
• Singular focus: Existing research is often focused on one type of participant, or a particular type of technology, rather than the overall trend towards the distribution of the court environment across more than one site.
• Architectural perspectives and design issues marginalised: The importance of the design of the remote space and the configuration or quality of the technology is often marginalised or completely ignored. A rare exception can be found in the work of Poulin (2004), who systematically lists several major concerns with current remote facilities provided for defendants, noting how they impact upon, among other things, the defendant’s experience of their immediate surroundings.
• Focus on witnesses and defendants: Most research focuses on implementation for vulnerable or child witnesses, and to a lesser extent, defendants. Very little work has been conducted on the use of videolinks for other purposes, such as expert testimony, remote adjudication or advocacy.
• Court protocols, symbolism and ritual ignored: Changes wrought to court rituals (such as ‘the journey to court’ and the transition from the outside world to the court space) are often ignored. Other embedded forms of symbolism such as established distances or recognised hierarchy are insufficiently recognised.
• Narrow disciplinary perspective: Research also tends to be conducted within disciplinary boundaries, rather than utilising insights and experience from a variety of perspectives. For example, legal studies generally contain very little reference to studies on videoconferencing outside of legal contexts, or to relevant studies in the fields of communications and media generally. Studies in the latter disciplines that have investigated the concept of ‘presence’ can be helpful in identifying factors that can contribute to the effective use of technology for tasks that

11 e.g. Plotnikoff & Woolfson (1999).
12 e.g. Cashmore & Trimboli (2005).
13 e.g. Taylor & Judo (2005).
16 Rowden (2011).
involve communication to or from a courtroom. The concept of ‘social presence’ as ‘the degree to which a medium is perceived as conveying the presence of the communicating participants’ \(^{18}\) is particularly helpful when analysing videolink use in courts. This encompasses the words conveyed, the context in which the communication takes place (including any nonverbal and verbal cues) \(^{19}\) and the extent to which participants can effectively collaborate or work together. \(^{20}\) The ‘richness of the media’ or the extent to which the videolink configuration is ‘able to bridge different frames of reference, make issues less ambiguous, or provide opportunities for learning in a given time interval, based on the medium’s capacity for immediate feedback, the number of cues and senses involved, personalization, and language variety’ is also important. \(^{21}\)

It is also critical to place an analysis of remote court environments and courthouse settings within the vast literature of environmental psychology and behavioural studies. Environmental psychology provides theories as to how different built environments affect human behaviour and comfort. Since the 1950s, many researchers working in this field have established that design and the built environment can have an important impact on our patterns of behaviour and on feelings of comfort and well-being. \(^{22}\) Furthermore, different environmental settings, atmospheres and spatial configurations may, to varying degrees, support or hinder particular kinds of behaviour in individuals and groups. In other words, a particular behaviour is more or less ‘afforded,’ depending on the nature of the environment in which that behaviour is attempted. \(^{23}\)

There are several sensory dimensions in the built environment that are deemed important to ensure psychosocial well-being, and that might effect the comfort of a remote court participant while sitting in a remote space. These include: access to, and direction of natural light; the type, quality and levels of artificial light; the size and shape of the room and access and egress points; access to a view of interest, preferably of nature; ambient noise levels and acoustic performance; and, the ability to control temperature to comfortable levels – neither too hot or too cold.

**b) ANALYSIS OF LEGISLATION AND CASE-LAW**

A comprehensive review of legislation enabling remote participation in all Australian States and Territories was conducted for this project (see Appendix A). The legislation was analysed in terms of the nature of the statutory provisions empowering remote participation, the type of remote participant, and the extent to which the court was empowered to impose terms and conditions on remote participation. Subordinate legislation, court rules and practice directions, were also examined.

Case-law from all Australian jurisdictions that interpreted and applied these provisions was also analysed. The focus of that analysis was directed to the the use and interpretation of these statutory powers to impose terms and conditions on the use of videolinks.

\(^{22}\) Sternberg (2009).
\(^{23}\) Gibson (1977, 1979).
KEY FINDINGS FROM REVIEWING THE LEGISLATION AND CASE-LAW:24

• **No overarching legislation:** There is no complete and comprehensive legislative provision for the use of videolinks in courts in any Australian jurisdiction. Rather, there is, in each jurisdiction, a combination of different pieces of legislation directed to different categories of remote participant (vulnerable witness, defendant) coupled with more general provisions directed to the use of videolinks to take and receive evidence from out of the jurisdiction and, in most cases, from elsewhere within the jurisdiction.

• **Presumptive use for vulnerable witnesses:** There are some variations between jurisdictions as to the way the evidence of ‘vulnerable witnesses’ is given, and in the types of witnesses that fall within that category. However, there is a strong trend to more uniform approaches, particularly in the case of child witnesses in sexual assault cases, where a presumption in favour of evidence being given by videolink is now clearly established. That trend should also be seen in the context of moves by many jurisdictions towards pre-recording of the victim’s evidence as the primary source of testimony.

• **Varied approaches to participation by defendants:** In the case of defendants in custody appearing remotely, the legislative approaches are more varied. Although there is a general consensus favouring presumptions in favour of the use of videolinks for more formal types of court appearances (remand, pre-trial hearings, adjournments), the legislation generally reflects the view that for more important types of court appearances, the defendant should be physically present in court. However, there is less consensus around what these more important types of hearings should include. Most legislation would presume that trials, appeals and sentencing would be conducted with the defendant physically present in court, although there is no uniform view in relation to appeals and sentencing.

• **Broad discretions:** Other than in the case of vulnerable witnesses, legislation is very general in its discretions and appears to provide judicial officers with broad powers to consider the desirability or otherwise of remote witness links. Discretionary powers typically require the court to consider ‘fairness’, ‘the interests of justice’ and, sometimes, ‘convenience’. Analysis of the case-law suggests that, in criminal cases, the focus on the rights of the accused (particularly in relation to evidence that is to be heard against them) will be a highly significant consideration. The cost and delay avoided by taking the evidence by videolink will generally weigh more strongly in civil cases than in criminal cases.

• **Some operational issues addressed:** In addition to broad discretionary powers, the legislation usually also focuses in detail on a number of practical issues, such as how documents can be shown to, or displayed by, the remote witness, how the witness can take an oath or affirmation, and how laws about contempt of court might be enforced, and powers for the court to deal with a technical failure.

• **Focus on setting up:** The focus of much of the delegated or subordinate legislation (court rules, practice directions) appears to be largely on the practical needs of the court in setting up and running the link (booking the link, notifying the court and other parties).

• **Limited attention paid to technical standards:** Most of the legislative provisions only en-

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24 This section is adapted from Wallace (2011): Chapters 3 and 8.
gage with technical standards relevant to the operation of the videolink to the extent that they require the link to provide ‘appropriate persons’ at either end of the link with sound and vision of ‘appropriate persons’ at the other end of the link. Neither the governing, or subordinate legislation generally contains any detailed specifications, for example, relating to camera angle, display size, audio or visual quality.

• **Extensive powers to impose conditions that appear to be under-utilised:** Most of the legislative provisions enable courts to impose conditions on the use of remote witness technology. In some jurisdictions, these powers are general, whereas others provide detailed options, including conditions related to technical standards, such as:
  - the equipment;
  - the layout of cameras;
  - standard and speed of transmission; and
  - the quality of communication.

However, few instances of courts contemplating, or exercising, these powers to any significant extent appear in the case-law.

• **Lack of detailed guidelines:** The wording of the provisions in most jurisdictions makes the use of these powers subject to conditions set out in the enabling legislation, or court rules. A number of courts have formulated guidelines and directions for the use of videolinks. Some focus on witness evidence generally. Others are more specifically directed to the situation of a defendant appearing from a correctional facility. The Australian provisions tend to stand in contrast to the detail contained in court procedures in other countries, such as the Netherlands and the United States. In the US, the Federal Judicial Center has laid down quite detailed guidelines for judges relating to the use of videolinks. They cover aspects of the technological and environmental set-up of the technology and the way it is used, including the camera shots, the views that are available to the parties, the handling of exhibits and the making of a record of proceedings. For example, it is suggested that document (‘evidence’) cameras be available at either end of the remote link to display exhibits, and that annotation tools be available so that the witness’s attention can be drawn to particular passages on a document or location on an exhibit. Rather than rely solely on court staff to control the operation of cameras, in some US Federal Courts, lawyers are able to undertake

Figure 5: Site visits revealed not only the configuration of the technology and the design of the remote space, but also indicated potential design failings and initiatives made by staff to train users (© Emma Rowden; taken from Rowden 2011: 53).
this task from special technology-integrated lecterns. Courts in the Netherlands have issued very detailed guidelines for the way the technology should be configured, with an emphasis on ‘true to life’ or providing equivalence to the courtroom experience. They set out standards in relation to:
- the configuration of the technology;
- lines of sight and perceptions;
- lighting and contrast;
- number and type of cameras and screens;
- ease of operation;
- dealing with documents; and,
- audio quality.
These, in effect, provide a functional, performative specification which the technology is expected to achieve.

c) SITE VISITS
The research team analysed sites involved with videolinked court proceedings in over 40 court-houses and 20 remote sites. Site visits took place over a three-year period. Researchers collected data on a range of spaces that a remote participant might experience. The research team took note of both quantitative or descriptive elements (such as room size, number of windows, location proximate to other places in the building, the physical arrangement of furniture, the items of technology present), as well as more qualitative elements (such as the quality of finishes, the ambience of the room, the quality of the technology - its type, configuration and capacity - and the extent to which the technology had been integrated into the built fabric).

KEY FINDINGS FROM SITE VISITS:
• Diverse range of remote spaces: There are a diverse range of types, sizes and scales of spaces used for remote court participation. Often, remote participation occurs from spaces that are multi-functional, and serve other purposes when not linked to the court. Interviews with stakeholders confirmed that Australian courts currently link to spaces as diverse as: a meeting or conference room, a business centre at a community centre or commercial office, a videoconferencing room or office at a university, a hospital

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25 van Rotterdam & van den Hoogen 2011.
26 This section adapted from Rowden (2011): Chapter 2.
chapel or tea room, and a room that is also used to store photographic equipment.

- **Unhealthy spaces:** The conditions exhibited in many remote facilities were often of a quality that was incompatible with principles identified in architectural and environmental psychology research about spatial features that promote well-being, reduce anxiety and calm their occupants.

- **Remote spaces are generally small, bland and anonymous in character:** For the witness who participates remotely, the ‘typical’ remote participation room is a small, bland, anonymous and sometimes crowded space, often also used to store other equipment or furniture. Some more recently built facilities designed specifically for child witnesses were a notable exception to this finding. The spaces used in prisons and other correctional facilities for videolinks tend to be similarly cold and featureless spaces. The view the courtroom receives of the space can sometimes be dominated by signage indicating the name of the prison. There is a strong emphasis on securing the equipment from the risk of damage by detainees, and on ensuring security in the videolink area.

- **Lack of natural light and views:** The purpose-built remote participation space often, but not always, lacks natural light or external views, with internal lighting that is cold and glaring.

- **Technology dominates:** The remote witness is often positioned extremely close to the technology (‘eyeballed’).

- **Technology not integrated:** The videoconferencing or CCTV technology is often not well-integrated into the built fabric of the room, as it is usually placed within a discrete and movable cabinet or trolley.

- **Limited courtroom views:** The remote participant is often only provided with two screen shots of the courtroom: one focused on the judge and the other on the bar table.

- **Difficulties viewing documents and exhibits:** Equipment to transmit documents or images of exhibits, such as document cameras, is not always available. When available, it is not always set up or installed; there are often no instructions to assist the remote participant to use it, and little in the way of technical support available.

- **Image of remote participant distorted and not life-like:** Remote participants often appear onscreen such that their face takes up a large proportion of the screen, and is badly lit.

- **Difficulties with simulating eye-contact:** The two-screen composition and position of the camera generally means that the eyes of the remote participant appear downcast as they switch back and forth between two displays (see Figures 32-34, pp 72-73).

- **Difficulties displaying multiple images:** If the Picture-in-Picture (PIP) option is used, sometimes it can obscure important details of the main image (in a multi-defendant prisonlink we observed, the PIP even obscured one defendant’s face).

d) OBSERVATIONS AND EXPERIENCES OF REMOTE PARTICIPATION

The research team observed remote and discrete courtroom settings. Observation findings revealed discrepancies between the legislation and practice notes describing how remote participation should occur, and what was happening in practice.

**KEY FINDINGS FROM OBSERVATIONS:**

- **Image of remote participant distorted and not life-like:** Remote participants often appear onscreen such that their face takes up a large proportion of the screen, and is badly lit.

- **Difficulties with simulating eye-contact:** The two-screen composition and position of the camera generally means that the eyes of the remote participant appear downcast as they switch back and forth between two displays (see Figures 32-34, pp 72-73).

- **Difficulties displaying multiple images:** If the Picture-in-Picture (PIP) option is used, sometimes it can obscure important details of the main image (in a multi-defendant prisonlink we observed, the PIP even obscured one defendant’s face).
Unnatural dislocation of voice from image of speaker: The voice of the remote participant coming through the speakers is often not co-located to the image of the person when viewed in the courtroom. In other words, the sound reinforcement speakers are often placed at a distance from the screen where the image of the person who is speaking is appearing. In one courtroom visited, the sound of the remote witness’ voice was heard from a sound reinforcement speaker directly located above the public gallery, while the screen with their image was located above the witness box on the other side of the courtroom.

Amplified speech often sounds unnatural and lacks clarity: The quality and effectiveness of speech communication via a videolink is influenced by the performance of the audio system and room acoustics at both ends. Therefore, when a weak link in the technical chain exists, it is common for listeners to receive speech from a remote talker that is unnatural sounding and of low intelligibility. At best this requires increased cognitive effort to interpret the spoken words. At worst speech intelligibility can be so poor that speech content is not properly understood.

e) SEMI-STRUCTURED INTERVIEWS
Interviews were conducted with over 60 stakeholders. The opinions of judicial officers, lawyers, court staff, expert witnesses, and remote court officers were sought, along with court administrators and architects who help procure court buildings.

Interviews were conducted over a period of 17 months between October 2008 and February 2010. Interview subjects were initially recruited by formal letters of invitation through our partners on the project (Department of Justice Victoria, Western Australia Department of the Attorney General, the Director of Public Prosecutions ACT and the Australian Federal Police). Further interviewees were identified and recruited through a ‘snowballing’ process whereby one interviewee suggested another, or during court observations and site visits. While some structured questions were used to ensure certain issues were addressed, in many interviews the issues were covered mainly as they arose naturally through the flow of conversation. Interviews were recorded on a digital audio recorder, anonymised, and later transcribed. Summary maps of the material covered in each interview were made by the researchers to code, then discuss, review and interpret the content.27

There was a wide spectrum of views regarding remote participation in court processes. Those interviewed were self-selected and generally held strong opinions regarding videolinks either way and perhaps saw this as a good opportunity to register those opinions in a more formal setting. This was particularly the case for those whose jobs dealt more directly with the day-to-day practicalities and operation of remote facilities. These interviews tended to run the longest.

KEY FINDINGS FROM THE SEMI-STRUCTURED INTERVIEWS28:

Diversity of opinions expressed but overall, videolinks seen as a positive development: There were a wide range of views expressed, however almost unanimously it was perceived that the introduction of videolinks into courts has

28 This section draws upon the analysis of interview data contained in Rowden (2011) and Wallace (2011).
been a positive step forward in:
- expediting court processes;
- minimising delays and travel times;
- improving the delivery of justice; and,
- supporting vulnerable witnesses.

Interviewees were more likely to support its use for uncontroversial evidence or administrative type procedures where considerations of cost and efficiency are most compelling. More diverse opinions were expressed in relation to its use for appearances that were seen as more significant, for example important or contested evidence or for sentencing defendants.

- **Adequacy of the environmental and technological conditions questioned:** Many interviewees expressed concerns about the adequacy of the videolink technology they were required to work with, and the quality of the environments that supported the technology. Concerns about the availability and limitations of tools to adequately display documents, exhibits and audio-visual material over videolink were raised frequently. Other concerns included restricted views (expert witnesses particularly complained about not being provided with views of jurors), as well as poor quality sound and vision.

- **Concerns expressed about effect on perceptions:** Some interviewees thought that evidence given in the courtroom made a greater impression on a jury than evidence given via videolink, particularly where it was evidence that was significant or important. However, this was not a universal view and there were suggestions that the standard of the technology (for example, the size and clarity of screen and audio) would be important considerations in relation to the impact of videolinked evidence.

- **Concerns expressed about the ability to assess credibility and the capacity to confront:** Some interviewees thought that witnesses who gave evidence on videolink were perceived as less credible, although others sharply disputed this view. Judicial officers who were dubious about the value of in-court assessments of demeanour as a guide to truthfulness generally saw no adverse impact on credibility where a witness gave evidence remotely. There were markedly divergent views as to the ability to effectively challenge a witness’s credibility on videolink, and the extent to which the ability to ‘confront’ a witness was both a requirement, and a possibility, when evidence was given on videolink.

- **Concerns raised about effect of remote appearance on behaviour of remote participants:** Many interviewees recounted incidents of remote participants being disinhibited in their behaviour, and often ‘forgetting’ that they were in court. This was evidenced by behaviour that was incongruent with the serious court setting, for example, some defendants and lay witnesses quoted as having said “see you later” to the judicial officer at the conclusion of the link. There were concerns that incongruent behaviour could impact adversely on the perception of the remote participant by those in the courtroom. This incongruent behaviour may, in part, be due to the fact that remote environments are in scale, decor, materiality and finishes often very different from that of a regular courtroom. The social and environmental cues as to appropriate behaviour are more difficult to read or sustain.

- **Sentencing by videolink raised concerns:** Although there is no doubt that it is occurring on a reasonably regular basis, almost all interviewees that raised the topic of defendants being sentenced remotely by videolink expressed concerns

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29 Rapoport (1982).
30 Rowden (2011).
about the practice. Those who held reservations felt that the significance of a sentencing hearing required the defendant to be physically present. Other concerns raised by judicial officers included a diminished capacity to engage with the community and the defendant in the process when sentencing was conducted remotely. Some lawyers expressed concerns about the impact of appearing remotely on the defendant’s behaviour, as well as the potential distance created between the defendant and their adjudicator.31

f) THE GATEWAYS EXPERIMENT
The final stage of the research consisted of a controlled experiment designed to test the relationship between some of the variables that had been identified — from site inspections, court observations and interview data — as impacting on the success of video-mediated encounters. The experiment focused specifically on one particular type of encounter: between a witness (expert or non-expert) and the courtroom participants who receive their evidence (lawyers, judicial officers and jurors).

Subjects
Research subjects who served as mock jurors were 170 jury-eligible Australian citizens living in Melbourne, recruited either from local newspaper advertisements (N=113) or from the jury pool in the Victorian County Court who attended court for jury service but who were not selected to serve (N=57).

Lay witnesses were recruited from local newspaper advertisements (N=64). Expert witnesses (N=21) were provided by the Australian Federal Police, the Victorian Police Forensic Department and the Victorian Institute of Forensic Medicine. Potential jurors and witnesses indicated their interest in participating via a website, where they were selected to achieve an approximately equal representation of men and women, and younger and older persons for each jury group. By contrast, court witnesses for each session were selected to be as similar as possible, to minimize variation.

Location
The experiment took place in August 2009 in the Victorian County Court in downtown Melbourne. One of the industry partners, the Victorian Department of Justice, made available a modern courtroom, a regular remote witness room, and a generous meeting room that was transformed into an ‘enhanced’ remote witness room. These building modifications were made possible with the support of the Liberty Group (the owners of the building).

A pilot test was carried out at the University of Canberra with some 30 management students. This study tested different aspects of the orientation and introduction of witnesses, as well as developing the items used in surveys of witnesses and observers. A second pilot, carried out over three days in June 2009 at the County Court Victoria, resulted in alterations to the design standards and processes used in the final experiment.

Conditions
Four conditions were tested, including one control condition (see Figure 7, p34). The control condition involved a ‘standard’ environment and ‘standard’ process (BB) and the three experimental conditions were: enhanced environment and enhanced process (AA), standard environment

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31 For further details, see Rowden, Wallace & Goodman-Delahunty (2010).
The conditions were tested in 21 sessions. A session was designed to have each of the four conditions, with each session presenting the conditions in a different order. The condition order was systematically varied to ensure that each condition appeared first and last at least 4 times. In practice, two of the sessions involving expert witnesses had an extra witness. Each witness testified only once. Witnesses at each session were randomly assigned to one of the four conditions. Jurors were assigned to one of the 21 sessions, based both on an attempt to get a demographic balance between jurors on each panel and their availability.

**Procedures**

Participants who registered via the website completed a questionnaire about a month before the study period. Those who volunteered on the day from the jury pool completed this questionnaire before participating in the rest of the process.

Witnesses were shown a short extract from a film by Wim Wenders, *The American Friend* (1977), which showed a hitman tailing his target across several Paris railway stations, before shooting him as he was ascending an escalator. This film was chosen because there was no dialogue, it had a fairly simple story line and was directly relevant to a criminal trial. Witnesses were shown the film segment, and then escorted to the remote witness room.

Each witness was assigned a different experimental condition. Jurors observed the four witnesses giving their testimony. Jurors did not know which of the four conditions each witness had been assigned, nor did they see the film extract. Given that the four witnesses all saw an identical event, it is likely that there was a learning effect for jurors across the conditions.

Witnesses completed one survey before leaving the witness room and coming into the courtroom for a debriefing with the jurors and the court participants. Jurors completed four surveys, one for each witness.
Measuring effects
Both pre- and post-questionnaires administered throughout the experiment included scales developed by the research team. Several scales were produced from items using principal components analysis. Where there were only two or three items on a scale, a modified version of this technique was used, in which ordinal rather than interval-level measurement was assumed. Somewhat different scales were produced for witnesses and jurors, reflecting both the different roles they played in the process, as well as the need to keep the jury questionnaire as short as possible to avoid survey fatigue. Witnesses participated in just one interview; jurors saw four (or, in a few cases, more) witnesses.

A distinction was made between the first witness that jurors saw, and subsequent witnesses; this difference reflects in part a ‘learning’ effect, once the juror had completed one form, they had a better idea of what the researchers were looking for, but it also provides a difference between initial impressions and more considered views.

4. gateways to justice project overview
Figure 9 (clockwise from left): Standard remote witness room: view of remote witness as they appear on the courtroom display; views of the two cathode-ray (CRT) screens on the movable trolley; view of remote witness in standard room with stacked chairs behind, movable trolley in the foreground, and blocked window in the background (© Emma Rowden).
Figure 10 (clockwise from left): *Enhanced remote witness room*: view of remote witness as they appear on the courtroom display; view of courtroom for remote participant on single large screen, other features of the enhanced room include views outside, comfortable chair, large windows with natural light, flowering plant, visual interest in textiles and colour scheme; view of background to witness with blue acoustic panel; self-view on widescreen allows the witness to check their appearance on the courtroom screen (© Emma Rowden).

4. *gateways to justice* project overview
Figure 11: *Standard remote witness room*: 3-D view of design for standard room; plan of standard room (3D model © ICE Design; plan © Emma Rowden).
Figure 12: Enhanced remote witness room: 3-D view of design for enhanced room; plan of ‘enhanced room (3D model © ICE Design; plan © Emma Rowden).

4. gateways to justice project overview
Figure 13: The courtroom within the County Court of Victoria, Melbourne, where the Gateways experiment was conducted (© Emma Rowden).
The survey measured witnesses’ responses to:
- the quality of the orientation;
- whether they were made to feel welcome;
- how well the interaction with the prosecutor went (whether the witness developed a rapport with the prosecutor, made eye-contact with them and sensed the impression they had made on the prosecutor);
- how well the conversation went (whether the conversation flowed smoothly, whether the witness could follow the questions and whether he/she was nervous); and,
- whether the witness was stressed, confused or anxious.

Jurors also provided responses to the above issues, except for those regarding orientation.

The experiment tested three effects:
1) the impact of the enhanced environment compared to the standard environment;
2) the impact of the enhanced process compared to the standard process; and,
3) the impact of having both environment and process changed relative to the standard condition for each.

Results
Witnesses who experienced the enhanced environmental conditions had significantly higher scores for the perceived quality of the technology and the witness room than those who were assigned to the standard condition. Jurors had a similar perception when they compared two witnesses experiencing enhanced conditions with two witnesses who were assigned to the standard condition. The changes to the physical and technological environment were recognized both by those who experienced them directly, and by those observing.

Witnesses who were assigned to the enhanced process condition reported a strong positive impact of the orientation, as well as the welcome they received. Jurors did not see the orientations so were not asked about this, but they did notice a difference in the quality of the in-court reception of the witness. As with improvements to the environmental conditions, process changes made a detectable and positive impression on both witnesses and jurors.

These environmental and process impacts test the quality of the experimental intervention. They measure whether the changes were large enough for participants and observers to notice, as well as whether they regarded these differences as positive. For both interventions, the effects were noticed and appreciated by both witnesses and jurors.

A further measure of the success of the experiment is whether there was an impact on the quality of the court procedure; in this case, an interview between prosecutor and witness. Given the short length of the interview, and the artificiality of the situation — the witness did not actually witness an assassination on a Paris subway — it might be expected that such an effect would be harder to find. Nevertheless, an improved process did enhance the quality of the interaction between prosecutor and witness, from the perspective of the witness. Jurors also reported a difference in the quality of the interaction, but only for the second or subsequent observation. This delayed response of jurors suggests that observers might detect changes in the physical environment relatively quickly (in this case, in observing the first
For the other two measures, the perceived success of the interview, and the level of anxiety or stress, there were no significant differences between witnesses who were assigned the standard and enhanced conditions. This is from the perspective of the witnesses themselves, who did not have anything to compare their experience with. A real witness might be questioned for considerably longer than the seven minutes, on average, that the witnesses in this study experienced. At the subsequent debriefing session, witnesses who were assigned to the standard process and environmental condition did express higher levels of anxiety and dissatisfaction relative to the others, so perhaps the witnesses were not conscious of how they were feeling at the time, and could name and describe their experiences only later.

However, from the perspective of jurors, there were significant differences for both perceived success of the interview, and the level of anxiety or stress, at least for the second or subsequent witness. (The delayed response is consistent with that of the witnesses). What is most remarkable, however, is that improvement in the effectiveness of the interview and reductions in perceived stress were identified not just for those who undertook the enhanced process condition. The witnesses who were assigned to the enhanced environmental condition also were perceived to be more effective in their interview and less stressed than their counterparts in the standard condition, even if the process remained unchanged. This suggests that, even if the witness might not consciously notice it, improving the quality of the remote witness room and the technology does make for a more successful justice process, from the viewpoint of the group of people who are entrusted with decision-making authority, the jury. Improving the process as well makes a further difference.

The main conclusions from these results is that justice agencies that are considering upgrading their facilities should do so as part of a holistic approach. Improving the design of the remote room and the technology does have a significant impact on the quality of the process. So, does improving the quality of orientation of the witness and procedure for introducing the witness in court. Improving them together is both a prudent and effective way of improving the quality of the justice process.

KEY FINDINGS FROM THE EXPERIMENT:
- Improving process has a positive effect, and improving the environment has a positive effect; however, improving both has a compounding effect: Improving processes and the environment and the technology together has a greater effect than improving either environment, technology or processes separately (see Figure 14a and 14b).
- The quality of the environment of the remote space is noticed by those in the courtroom: In the experiment, it was found that improving the design of the remote witness room meant that the overall environment was seen as more friendly both by witnesses and jurors.
- Improving the quality of the videolink technology is noticeable by those in the remote space and the courtroom: In the experiment it was found that improving the quality of the technology made the experience of both sound and
4. gateways to justice project overview

Figure 14a: Results of Juror Perceptions - left graph shows juror perceptions of technology and environment as compared to their perception of the baseline standard environment / standard process condition (BB); right graph shows juror perceptions of witness performances, as compared to their assessment of witnesses who experienced the baseline standard environment / standard process conditions (BB).

Figure 14b: Results of Witness Perceptions - left graph shows witness perceptions of technology and environment as compared to the perception of witnesses who experienced the baseline standard environment / standard process condition (BB); right graph shows witness self-assessment of performance as compared to those witnesses who experienced the baseline standard environment / standard process conditions (BB).
vision better for both witnesses and jurors (see Figure 14a and 14b).

- **Improved technology and environment in the remote space indicates an improved interaction with those in the courtroom:** Witnesses reported a better interaction with the prosecutor in the enhanced environment than in the standard environment (see Figure 14b).

Figure 15: Image of what the Judge’s overview display shows of the standard remote room (© Emma Rowden).
5. synthesis of key findings: design and operational guidelines to improve the remote encounter

Introduction
The study had two major findings. Firstly, the way in which videolink technology is implemented has a real impact on service delivery, and therefore justice outcomes; how videolinks are used, their design and operation, matters. The second major finding of the study is that a successful videolinked court encounter requires careful consideration of the technology, environments, personnel, protocols and legislation that enable their use. These factors work together and none of them should be ignored or viewed in isolation. The following guide provides a synthesis of the recommendations of the study for court managers, technicians, architects, designers and others who wish to operationalise the findings.

The Remote Court Encounter
The structure of these recommendations have have been configured around the four stages of what we term “the remote court encounter” (see Figure 16).

These stages are:
1. Prior: What happens before the day of the court appearance;
2. Thresholds: A threshold is the transition between one state, or place, with another. This stage refers to what occurs at the remote space on the day of the court encounter. Thresholds may be crossed multiple times and at several points during a remote appearance. They may take the form of a physical threshold (moving in and out of the remote room), as well as a technological threshold (connecting and disconnecting the videolink to the court).
3. The Encounter: What occurs over the course of the videolink; and,

Our suggested operational and design guidelines identify and address key issues that arise at each stage of the remote court encounter, and recommendations identified are either to do with suggested changes to the process (addressing court protocols, procedures and administrative matters), or the design (addressing the technological and environmental conditions) of the videolink.

Figure 16: Diagram showing stages of the remote encounter (© Emma Rowden).
Another factor affecting the videolink process is the role of the participant appearing remotely. We identified nine main categories of potential remote participants:

1. Lay witness (defined as non-vulnerable, non-expert)
2. Vulnerable witness (either a child and protected witnesses)
3. Expert witness
4. Defendant
5. Judicial officer (judge or magistrate)
6. Lawyer
7. Members of the public (including supporters of the victim, defendant or an other party, as well as interested members of the public).
8. Media (press gallery)

Remote for access, Remote for separation
More broadly, the reasons for participating remotely may be defined as:

1. Remote for providing access
   - for giving evidence (e.g. remote witness - lay, expert)
   - for appearing (e.g. remote defendant)
   - for attending (e.g. family or supporter in a remote location)
   - for presiding (remote judge)
   - for advocating (remote lawyer)

2. Remote for providing separation
   - for giving evidence (e.g. child or vulnerable witness, protected witnesses)
   - for attending (e.g. parties in conflict, a disruptive defendant).

Additional persons in the remote space
A remote space, in this context, is a place from which a participant is videolinked to a courtroom. We identified two different types of remote appearances:

1. Assisted appearances: Some remote participants are accompanied by another person. This might be a trained support officer or volunteer (e.g. in the case of a child witness or other vulnerable witnesses), or in the case of a defendant, a prison officer. That other person may operate the technology and provide additional information about the court process to the participant.

2. Unassisted appearances: Some remote participants are alone in the remote space (e.g. expert witnesses, and some vulnerable and lay witnesses). In these instances, the remote participants have the responsibility for accepting the videolink call, and may be required to set up the room beforehand. They will need to be more self-sufficient and more involved in setting up the videolink. They may also need assistance from the court to ensure their comfort (access to water and other amenities). The level of additional support may vary depending on the person’s role and prior experience in giving evidence by videolink.

The court should also consider the nature of the evidence to be given (traumatic personal evi-
5. synthesis of key findings: design and operational guidelines for improving the remote encounter

dence versus non-controversial and non-personal
evidence) when considering additional support.
Those more vulnerable, unassisted, remote wit-
tnesses may require additional checking to ensure
that they understand instructions and/or what is
occurring.

Types of remote spaces
Remote spaces can be classified according to
whether or not they are used for other purposes,
or, whether they are used solely for videolinks.
They are either:

1. Dedicated remote facilities: (see Figure
17a). These are generally purpose-built remote
rooms and associated spaces that are only used
for videolinks and are not used for any other pur-
pose. Examples of this type include the remote
witness facility within or attached to a court-
house, or a videoconferencing room in a prison,
or,

2. Multipurpose remote spaces: (see Figure
17b). These spaces are only occasionally linked
to the courtroom. For instance, our study found
that a remote court participant might find them-

Figure 17a: A dedicated remote facility (© Emma
Rowden).

Figure 17b: A remote participant appearing from a
multipurpose remote space with stacked chairs in the
background (© Emma Rowden).
selves in settings as varied as a hospital chapel or tea room, a business centre videoconference room, a university office, a multifunction meeting room, or a room that doubles as a storeroom. 33

Two rooms in one: what the court sees and what the remote participant sees

Any remote space can be seen as divided in two: Remote Room a = what the remote participant sees of the space (when seated); and, Remote Room b = what the court sees of the remote participant and the remote space (Figure 18). 34

As a general rule, remote room b should always frame the remote participant in a way that gives the impression to those watching from the courtroom that the remote participant is being treated with dignity and respect, and that there is nothing distracting, or diminishing the appearance of, the remote participant.

33 Rowden (2011): Appendix H.
34 Rowden (2011): 332 & Appendix H.

Figure 18: The remote space as being “two rooms in one” (© Emma Rowden; Rowden 2011: Appendix H).
5. synthesis of key findings: design and operational guidelines for improving the remote encounter

Types of videolink technologies

During the early days of courtroom videolinks, courthouses that accommodated vulnerable witness facilities utilised CCTV technology to make the link between the witness room and the court. The CCTV infrastructure was proven technology based around point to point hardwired cabling systems that routed the video and audio signals from one room to another via central switching hardware. While this basic platform provided an adequate video solution, audio was commonly more problematic as it generally lacked the benefits of echo cancellation and other important audio signal processors.

With the maturity and price reduction of audiovisual technologies and the increased availability of bandwidth across building networks and the internet, video conferencing codecs (used to encode and decode audio and video signals for transport as data over a network) present a far more flexible and reliable solution that can link rooms located in the same building or on opposite sides of the world. As such, CCTV is gradually being phased out.

The immediate future of video conferencing technology shares the same focus as the aims and aspirations of the design guides included in the appendices of this document, namely, the enhanced sense of naturalness and authenticity when communicating with a remote participant.

Current buzzwords and tradenames include immersive, virtual reality and telepresence environments. In practice each is striving to capture the aural and visual nuances of communication in more detail through the use of higher definition video, more sophisticated audio and increased control over equipment placement and the room environment.

Another rapidly emerging area of development is the integration of BYOD (bring your own device) integration where personal devices such as smartphones and tablets can be used to access conventional video conferencing networks. To what extent the introduction of this convenient and potentially informal communication capability

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35 We are particularly indebted to Rod Louey-Gung from ICE Design for his contribution to this section.

Figure 19: Early videolink equipment from Darwin c. 1989 (Photography: Michael Strong).
ity is relevant or appropriate to court proceedings remains to be seen.

While some technology vendors and commentators are advocates for virtual reality and total immersion, there is a strong argument to be made that total immersion is not appropriate for all types of remote court participants. For instance, vulnerable and/or child witnesses may not necessarily find such immersive experiences conducive to giving evidence, as immersion may work against some of the existing benefits provided by the remote facility. Regardless, this should not prevent courts trying to improve the environmental and technological conditions of remote facilities in terms of comfort and their potential role in creating a sense of decorum and dignity for the remote participant.

Figure 20: View of the courtroom via a CCTV link—note only the top half of the torso of the Judge and the lawyer speaking at the bar table are visible. While such views allow for better visual registration of the faces of the main speakers, this set-up denies the remote participant an overall sense of the courtroom space. This may be ideal for vulnerable and child witnesses, but not for other types of remote participants (© Emma Rowden).

36 see: Rowden (forthcoming).
Figure 21: View of Courtroom via videoconferenced link — note that there is a clear sense of the overall courtroom space, without the public gallery area or the defendant being visible for the remote participant. However, each face is very difficult to read. With the appropriate technology, the camera can be zoomed in for a better view of the speaker. Note also the difference in screen quality between the display in this image as compared to those in Figure 20. The picture-in-picture is a self-view, but could be changed to show a close-up of the judge instead (© Emma Rowden).

Figure 22: DVE’s “telepresence” system, using mirrored glass to simulate making eye-contact over the videoconferenced link (©PTW Architects).

5. synthesis of key findings: design and operational guidelines for improving the remote encounter
5.1 prior

This stage involves both providing the infrastructure and procedures for enabling videolinks to occur, as well as preparing for an individual videolinked case. The first process is administrative and formal systemic preparation, involving professionals, court administrators and staff. The second part is focused on identifying the needs and actions of each individual remote participant in a particular case, and how court staff, administrators and architects can pre-emptively respond to these needs. Accordingly, this section will be divided into a) general systemic preparation (Infrastructure and procedures for videolinks), and b) preparations for an individual videolinked case (Preparing for each videolinked encounter).

5.1.1 Infrastructure and procedures for videolinks

IMPROVING THE PROCESS

• Maintain a central registry of facilities available for videolinks: Clearer and more centrally-kept records of what facilities are available, that document the quality and capacity of the audio-visual equipment, as well as other features of the room, would be useful. These records should note relevant items such as the availability of a document camera, the size and amenity of the waiting room, links to witness support services, safety features (for example, the availability of a secure and separate entrance for vulnerable witnesses). A record might be maintained for both court-operated facilities, such as those within associated justice agencies (corrections, police, forensic services), as well as local facilities that have been used successfully for links into court (lawyer’s offices, libraries, hospitals, universities, business centres etc). Such a register will assist court staff, lawyers and prosecutors who need to identify appropriate remote spaces for a particular case.

• Streamline the process for court permissions: Information concerning the availability of videolinks, the process for their approval and the conditions attached to their use should be readily accessible to all court users. This might be done in the form of information on the court website, and be included in briefing pamphlets and e-Briefs provided to witnesses. An automated system might be developed, whereby a party could indicate that they propose to apply for a link and where the opposing party could indicate wheth-
er or not they opposed that and, if so, on what grounds. If the link is not opposed, then a booking might be initiated (see below). If the link is opposed, then the matter should be referred to a judicial officer to consider at a pre-trial or directions hearing.

- **Standardise procedures for booking the link and rescheduling the link:** There is a need for a standardised, streamlined system that is managed centrally in each jurisdiction through a web-based form (these could be co-ordinated nationally to be compatible across jurisdictions). Request for a link should include details of time, equipment required and level of support (e.g. expert, vulnerable, whether documents or exhibits will need to be displayed over the link as well as the image of a person). Guidance for court staff is necessary to advise how best to manage competing priorities. Interview data suggests that priority sometimes seems to be aligned to court hierarchy rather than to needs.

**IMPROVING THE DESIGN**

- **Adopt minimum standards for optimum design of remote witness facilities and for selecting sites suitable for occasional links to courts (see Appendices B and C).** Appendix B outlines important information that should be taken into account by those procuring, designing and constructing remote spaces in courthouses, prisons and other facilities that are often linked to the courts (such as the videoconferencing suite of a forensic laboratory). Appendix C outlines important information that should be taken into account when selecting suitable sites that will only occasionally be used to link into court. We recommend that courts adopt the prescribed ‘minimum standards’ in Appendices B and C, based on the empirical evidence of this study, to improve the design of remote court spaces, and selection of other ‘multifunction spaces’.

- **Design technology at the same time as the built environment:** For the optimum operation of audio-visual technologies, the surrounding built environment often needs to be designed in specific ways (acoustic treatment of walls, placement of microphones and screens, position of screens in relation to natural light etc). This is easiest to do in tandem with the design of the space, rather than fitting it into an already fixed design.

- **Fine-tune the design of the remote facilities during the commissioning stage:** A fine-tuning session should occur at the commissioning stage of the building procurement process. This would trial and refine the optimum technological and operational design conditions more generally for each particular facility. This session would also inform the advice to be given to remote participants appearing from this particular location. For example, the exact location of specialist videoconferencing lighting, reinforcement speakers and other parts of the videolink equipment will need adjustment and can only be performed once installed. Likewise, the optimum placement of acoustic panelling or other furniture, may require fine-tuning during this stage. Particularly with movable items, the optimum conditions should be documented, so that the remote participant, or preferably their support person, can ensure that the environmental and technical conditions of the space are configured correctly prior to the commencement of each link.
5.1.2 Preparing for each videolinked encounter

IMPROVING THE PROCESS

• Provide adequate and appropriate briefing to prepare the remote participant: A person participating remotely in a court proceeding should be provided with sufficient and timely information prior to the court proceeding to enable them to adequately prepare for their court appearance. This should include information about:

a. what to bring with them: For example, any documents or exhibits, and the form in which this material should be provided in order to be transmitted across the videolink;

b. what to wear: Participants should be briefed on recommended clothing choices:
   i) regarding colour, wearing white should be avoided. Any extreme colour contrasts in the colour spectrum might make facial features difficult to read when picked up by the camera. Such conditions may depend on the colour scheme of the room, the direction of the light onto the person’s face in relation to the camera, and the colour of their skin. Each facility may need to develop their own guidelines based on trial and error to define what creates the most legible settings within that space (see commissioning stage outlined above).
   ii) regarding the cut of the clothing, a participant might be advised against wearing such items as a low-cut top, a short skirt or other potentially revealing clothing, so as to prevent the participant displaying more of their body to the courtroom, than they realise or desire, because of the nature of the camera angles used in the videolink.

c. what to expect: Participants should be briefed on what to expect:
   i) when they arrive at the remote participation facility. For example, they should be told:
      - where they should go,
      - whether anyone will be there to meet them, or help them prepare,
      - how much time they will have to wait,
      - where the bathroom is,
      - where they can get a glass of water or leave their personal effects, etc.; and,
   ii) when they are linked by videoconference to the courtroom. For example, they should be told:
      - who the other participants are,
      - who will be able to see and hear them,
      - whom they will be able to see and hear.
      (Note: child witnesses and witnesses with intellectual disabilities will need this information tailored to be age-appropriate in its complexity and level of detail).

The nature and type of this preparatory briefing will vary, depending on the participant themselves, the nature of the role, and their familiarity with the court process. However, it should not be assumed that a participant who is more familiar with the court process will necessarily be equally prepared for videolinked participation. For example, an expert witness may have given evidence before but never used a document camera over a videolink and may require technical support to operate the equipment. Briefing material should be available in two forms: a pamphlet and a standard ‘e-brief,’ that could be either sent to the participant in hard copy, or messaged/emailed to their mobile phone (or an ‘App’ that provides a step-by-step guide to their court appearance). This should include things like explaining how remote participants can check their own appearance on the link in order to find out how they will appear onscreen to those in the courtroom.
• **Allow time and resources for testing and modifying the link with the remote participant prior to their scheduled appearance:** There should be an opportunity for the link to be tested prior to the connection for the court appearance, to ensure that:
  - the technology is working;
  - the required sound and vision is being delivered to an acceptable standard;
  - all participants have relevant views of other participants that they require; and,
  - documents or exhibits are able to be adequately displayed over the videolink.

Adjustments to the videolink to suit the unique requirements of each case should be encouraged at this stage of testing the link (e.g. adjustment of camera angle to accommodate a tall witness), and during the link itself if necessary (e.g. adjustment of volume levels). For higher volume courts, such adjustments may only be possible during court by the court staff operating the equipment. Adequate ongoing training to educate and empower those operating the equipment to make such adjustments is important. Such recommendations need to be balanced with recognition of the workloads of these staff. Pre-set configurations that provide a variety of tailored solutions for different types of remote participants may address this issue. However, the ultimate responsibility lies with the judicial officer to be satisfied that appropriate modifications have been made, which may require a short adjournment or additional technical support to rectify.

• **Provide the remote participant with support on the day of their appearance:** An appropriate level of support should be available to the remote participant so that they are able to perform their designated role with minimal additional disruption to the court proceedings resulting from the use of videolink. For example, where a facility is used for a remote expert witness, there should be an appropriate level of technology support provided to assist with displaying documents and exhibits using a document camera, or iPad (that support might be provided remotely e.g. by telephone link). For a vulnerable witness, a suitably trained witness support officer will be essential. An unassisted remote participant may require additional support from the court during the link. This might be achieved by way of a centrally manned “helpdesk” support line that could initiate a call to the remote participant prior to the court appearance and run through a checklist of practical and technical aspects (e.g. ensure that the background image to the remote participant is not distracting; ensure the participant has access to a self-view; ensure they have a glass of water, etc.).

• **Provide the remote participant with an orientation of the court:** In the same way that a participant entering a physical courtroom has the opportunity to enter that space, observe the other participants and orient themselves, there should be an opportunity for the remote participant to receive an introduction and orientation to the courtroom. Typically, this might occur at the commencement of the videolink, or immediately prior, but it could also take place in the physical courtroom at another time, if that is more suitable or convenient. The orientation should provide the remote participant with information about the other courtroom participants and their location, whom they can see and who can see them. At the beginning of every court appearance, the court should be satisfied that all remote participants:
- have all the materials they require for their appearance;
- have fresh drinking water available;
- know what to do if there is a technical breakdown / failure;
- know what to do if they are unwell.

**Day-to-day maintenance for dedicated remote facilities:**

*a. This room is “part of the courtroom” when the link is active:* All staff (cleaners, managers, administrators) should treat the space in the same way as they treat a courtroom space, particularly in terms of how it is left when not in use. A sign on the outside of the door to the space reminding staff and remote participants of this fact may be helpful, including the same diagrammed warnings that appear outside many courtrooms.

*b. Clear the room of clutter:* The remote room should not be used as a storage space, or contain any extraneous objects that would be incongruous in a courtroom. Any such objects should be removed, or at least placed out of field of view of the court and the remote participant, but preferably out of the remote room entirely.

**Day-to-day maintenance for multipurpose remote spaces:**

*a. Provide an appropriate background to the remote participant:*  
  i) for spaces that are regularly linked to courtrooms. Where these spaces are regularly used to link to court, but are also used for other purposes, courts should provide a universally standard movable backdrop that has acoustic panelling and is congruent to a court setting. The background should be light and easily removed and stored away by one person for when the space is used for other purposes.  
  ii) for spaces that are only used sporadically to link to courtrooms: there should be clear information provided to the remote participant on how to prepare the room for the videolink.

**c. Ensure there are no intrusions or disruptions:** When linked to the courtroom, there should be a sign on the door to the space preventing others from coming in and disrupting proceedings. This may be similar to the “on air” illuminated sign in a broadcasting studio, or be simply a sign indicating: “please be quiet, this space is in use, please do not disturb”.

**Day-to-day maintenance for multipurpose remote spaces:**

*a. Provide an appropriate background to the remote participant:*  
  i) for spaces that are regularly linked to courtrooms. Where these spaces are regularly used to link to court, but are also used for other purposes, courts should provide a universally standard movable backdrop that has acoustic panelling and is congruent to a court setting. The background should be light and easily removed and stored away by one person for when the space is used for other purposes.  
  ii) for spaces that are only used sporadically to link to courtrooms: there should be clear information provided to the remote participant on how to prepare the room for the videolink.

**b. Ensure there are no intrusions or disruptions:** When used as a remote space, there should be a sign on the door to the space, preventing others from coming in and disrupting proceedings. This may be simply a sign indicating: “please be quiet, this space is in use, please do not disturb.”

**Allow for pre-and post-court videolinks as required:** If a defendant is appearing remotely, it may be important for defence counsel to be provided with the facility to be able to videoconference with their client immediately prior to (or the morning of), and after, their appearance in court.

**IMPROVING THE DESIGN**

* Tailor the configuration of the videolink for each individual case: The videolink should be tai-
lored with reference to the communication needs of the participants for the task being performed. It should not be assumed that each type of court interaction will necessarily be satisfied by the standard current set up. While court staff are currently responsible for operating the equipment, ultimately it is the judicial officer in charge of the courtroom who is responsible for overseeing the design and operation of a videolink, in the same way that they are have oversight and control over other aspects of the courtroom. Thought should be given to the views required, both of the participant and of those in the courtroom, in relation to the particular participant or case.

A common situation where tailoring might be required is when an interpreter is used (either simultaneous or consecutive). This requires careful consideration. Solutions may vary depending on the needs of the person who requires interpreting. The interpreter must have good visual access to all participants, including the jury if present, and good access to the person for whom they are interpreting. They should appear as an officer of the court, rather than as a support person for the participant who requires interpreting. Similarly when two expert witnesses are giving concurrent evidence by videolink, or, one is giving evidence by videolink and one is appearing in the courtroom, careful thought needs to be given to the arrangement of technology and persons. Screen placement, camera angles, as well as the placement of other courtroom participants might be reconfigured to ensure that each participant can see and hear each other.

• Plan for the possible need to reconfigure the technology, the courtroom and/or the remote space: Changes to the configuration of the technology and the set up of the room might require planning and changes prior to the day of the remote court appearance. As such, a checklist of issues to consider beforehand might include:
  - the height and size of the participant on screen: they should appear life-size in courtroom and be proportionate (in that the position of their head and torso on the display is in proportion to the background);
  - their hand gestures should be visible;
  - their skin tone in relation to the backdrop colour and the visibility and legibility of their facial expressions;
  - whether a document or exhibit needs to be displayed in association with the participant’s image (e.g. a forensic expert explaining a crime scene photograph);
  - does/should the remote participant be able to see and hear:
    a. the judge/magistrate? (all participants)
    b. the jury? (especially expert witnesses)
    c. the lawyers at the bar table? (all participants)
    d. the defendant? (not vulnerable and child witnesses)
    e. the public gallery? (this might be particularly significant for remote defendants, for instance).

• Establish pre-set camera configurations for different types of remote participants: It is possible on most videoconferencing systems to set ‘pre-set’ configurations of camera angles, and views. These can be useful short-hand methods for achieving appropriate configurations to suit different types of participants, or different types of proceedings, but should be checked periodically to ensure that they are still correctly configured...
• **Provide capacity to display documents and exhibits:** Document cameras should be available, and already set-up and configured for the remote participant. Similarly, relevant equipment and connections to enable an expert witness to deliver an electronic (e.g. Powerpoint) presentation should be available.

• **Provide capacity to display a wide variety of courtroom views:** The equipment needs to be capable of providing views of all courtroom participants (configured as required) to the remote participant and audio that is co-located with those views. Displays and speakers should be appropriately positioned to achieve this. Placement of camera and displays should be sensitive to eye direction. For example, poor camera and display placement can result in a perception that the remote participant looks “shifty.”

• **Provide capacity for self-views:** The equipment also needs to be capable of providing a self-view. This may be in the form of a picture-in-picture view (PIP), or on a separate display monitor, in or-
der to enable the remote participant to see how they will appear to the courtroom. The remote participant, or their support person, should have the ability to turn off the self-view before, or after, the commencement of the videolink if they find it distracting.

Figure 24: Non-verbal cues are more difficult to convey over videolink when the camera restricts the frame to the head and shoulders of the remote participant (© Emma Rowden).

Figure 25: Some videolinked connections enable a “self-view” for the remote participant to see how they are being depicted in court (© Emma Rowden).

Figure 26: A self-view at a prisonlink (© Emma Rowden).
## SUMMARY OF KEY ISSUES FOR ‘PRIOR’

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<th>KEY ISSUES</th>
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<tr>
<td><strong>1) INFRASTRUCTURE AND PROCEDURES FOR VIDEOLINKS</strong>&lt;br&gt;This refers to the administrative and formal systemic preparations required to enable videolinked encounters in courts, and involves work undertaken by design professionals, court staff, and court administrators.</td>
<td>• Maintain a central registry of facilities available for videolinks&lt;br&gt;• Streamline the process for Court permissions&lt;br&gt;• Standardise procedures for booking the link and rescheduling the link</td>
<td>• Adopt minimum standards for optimum design of remote witness facilities and of selecting sites suitable for occasional links to courts (see Appendices B &amp; C)&lt;br&gt;• Design technology at same time as the built environment&lt;br&gt;• Fine-tune the design of the remote facilities during the commissioning stage and document optimum conditions in a central registry</td>
</tr>
<tr>
<td><strong>2) PREPARING FOR EACH VIDEOLINK</strong>&lt;br&gt;This part of the process is focused on identifying the needs and actions of each individual remote participant in a particular case, and how court staff, administrators and architects can pre-emptively respond to these needs.</td>
<td>• Brief the remote participant about a) what to bring with them; b) what to wear; and, c) what to expect&lt;br&gt;• Test and modify the link as necessary with the remote participant prior to their scheduled appearance</td>
<td>• Tailor the configuration of the videolink for each individual case&lt;br&gt;• Plan for the possible need to reconfigure the technology, the courtroom and/or the remote space&lt;br&gt;• Establish pre-set camera configurations for different types of remote participants</td>
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KEY ISSUES

(2) PREPARING FOR EACH VIDEOLINK ... CONTINUED ...)

IMPROVING THE PROCESS

- Provide the remote participant with information and support on the day of their appearance

- Provide the remote participant with an orientation of the court

- Day-to-day maintenance for dedicated remote facilities:
  a. This room is “part of the courtroom” when the link is active
  b. Clear the room of clutter
  c. Ensure there are no intrusions or disruptions

- Day-to-day maintenance for multipurpose remote spaces:
  a. Provide an appropriate background to the remote participant
  b. Ensure there are no intrusions or disruptions

- Allow for pre- and post-court videolinks as required

IMPROVING THE DESIGN

- Provide capacity:
  - to display documents and exhibits
  - to display a wide variety of courtroom views
  - for self-views
5.2 thresholds

There are multiple thresholds experienced in the course of one court proceeding. While a threshold can be defined as the physical transition into “the remote space,” we will mainly be considering here the threshold into the “live” videolink, and into court.

Thresholds may be crossed multiple times during a videolink. The main thresholds are at beginning and the end of a link – but there may be other thresholds – for example, interruptions for legal argument.

5.2.1 Waiting in safety

Court processes often involve significant periods of waiting for participants; this is especially so for witnesses. For some witnesses (such as experts appearing from their workplace) the use of videolinks will reduce waiting times. However, for other types of witnesses, such as vulnerable or child witnesses, there may still be considerable waiting times for a remote appearance. Adequate support and facilities should be provided to the remote participant if they are required to wait for their court appearance.

IMPROVING THE PROCESS

- **Provide information for remote participant as to approximate duration of waiting time:** Being physically disconnected from the court space can make the waiting period more uncertain and stressful. Regular contact with the court officer via text message, or another form of communication, can keep the remote participant connected to the court’s schedule. This can be managed by the support person in the case of an assisted remote appearance, or by the remote participant themselves.

- **Provide appropriate reading material to type of remote participant in waiting area (age and gender appropriate):** Courts should provide reading and/or other relaxation materials in the waiting areas of court-operated remote facilities. Remote participants waiting in ‘multipurpose’ spaces should be encouraged in the briefing they receive to bring books or magazines, and other relaxation activities (games, knitting etc.) to ease the stress and anxiety that may accompany waiting for long periods of time. Facilities provided for child witnesses should have appropriately-sized and comfortable seating, toys and a play area.

Figure 27: Waiting spaces for child witnesses and their family at a Child Witness Facility (© Emma Rowden).
IMPROVING THE DESIGN

• Provide an entry sequence that ensures safety and privacy: For vulnerable or protected witnesses, access to the remote facility may need to be both private and secure. When the remote facility is located within a court building, access should be in a zone that is out of sight from other public entrances.

• Provide adequate facilities in the waiting areas (e.g. tea bench, toilets) to avoid re-entry into public areas while waiting: All remote participants should ideally have access to bathroom and kitchen amenities (ideally separated from public or shared areas for multipurpose remote spaces), a comfortable waiting area with views, preferably of the horizon, as well as access to outdoor (and smoking) areas. The nature and the type of waiting/support areas will depend upon the needs of particular types of remote participants. Vulnerable or personal evidence may require more separate and secluded support areas than less contentious or routine appearances.

• Provide a second line of communication between remote space and the court: Provide a second line of communication between the remote space for purposes such as a) notifying remote participant and support person when videolink is about to commence; b) emergency situations e.g. if a remote witness is suddenly seriously ill; c) notifying of a technical failure e.g. if there is a failure of sound or vision, or a diminution of the quality of the videolink, that is not immediately apparent to the parties at the other end of the videolink.

5.2.2 Transition from the outside world to the court space

For many remote participants the journey to their court appearance will be less formal than that which a participant attending in person at the courthouse will experience. Participants need to be aware of the serious nature of the proceedings and the importance of their participation. Information should be provided that explicitly reminds participants that when the videolink is on, the place where they are participating from is under the control of the court, that the rules of the court apply. The onus is on the court to inform them that they are expected to behave in a manner that is appropriate for a courtroom.

IMPROVING THE PROCESS

• Provide support when the unassisted remote participant needs to accept the videolink call: Assisted remote participants will generally have the link established for them, whereas an unassisted participant will be expected to play a part in this process by accepting the call from the court (when videoconferencing is used). They may require support and information in order to achieve this, and may require instructions as to what to do if the link fails.

• Welcome the remote participant to the court: The judicial officer should welcome the remote participant (for the first time, and again if there has been a break for legal argument or a rest), and in the first instance, introduce them to all persons in the courtroom who have a role in the proceedings. A standard and scripted introduction can be a useful aid for judicial officers in this regard, but care should be taken to ensure that the welcome does not become depersonalised and formulaic. It is important also to farewell the participant properly at the end so that they know that their appearance is over.
• **Ensure sound and vision is adequate:** The judicial officer should, during the welcome orientation, ensure that the remote participant can adequately see the faces of those who are speaking to them, and that they can adequately hear everyone who is required to speak.

• **Ensure the comfort of the remote participant:** The judicial officer should make sure that the remote participant is aware of a protocol for alerting the court if anything needs adjusting for them, or if they need a break. At the beginning of every court appearance, the judicial officer should be satisfied that the remote participant is sufficiently oriented to the courtroom, including that they:
  - have all the materials they require for their appearance;
  - have fresh drinking water available;
  - know what to do if there is a technical breakdown / failure;
  - know what to do if they are unwell (or, in some cases, if they need a break).

**IMPROVING THE DESIGN**
• **Articulate the threshold architecturally:** The symbolism of the threshold, and how that is crossed, needs careful consideration, and potentially, exaggeration. It will be easier to achieve this in purpose-built dedicated remote facilities that are in the court’s control. However, as technology develops there may be other ways to simulate this threshold in an immersive experience (see Appendix B, p116, for further information).

• **Indicate that the remote space is ‘live’ to the courtroom through signals and/or technology:** This may be achieved by way of a small coloured light or signal to indicate that the space is ‘live’ to the courtroom. This signal should be as unobtrusive as possible, and should be noted to the participant so that they are aware of it, but able to be turned off by the remote participant should they so desire. Such a signal should be carefully crafted. For instance, some vulnerable or child witnesses may find that a “countdown” produces additional, rather than less, stress.

5.2.3 **Being “in court”**
It may become difficult for the remote participant to maintain a sense that they are ‘in court’ - particularly if the behavioural cues of the remote location are at odds with the courtroom environment. Therefore remote participants may require additional assistance in order to maintain a demeanour appropriate for a court appearance.

**IMPROVING THE PROCESS**
• **Make clear the distinction between being “in court” and “out of court”**. Clear and timely information should always be available to the remote participant about when they are, and are not, ‘live’ to the court. Operating staff should provide that information orally once the videolink is established, and, at the termination of the link. A reminder should be given to a participant during stages of the proceedings when they are visible and/or audible, but not actually participating in the proceedings. Each participant should be able to know with certainty whether or not they are live to the courtroom, and to be given adequate warning as to when the link has commenced and when they have ‘entered’ the courtroom.

• **Create a formal atmosphere to assist the remote participant to maintain an appropriate demeanour to the court setting:** Individuals obtain information about behaviour they should adopt for each setting they encounter through a com-
bination of environmental and social cues. These cues are potentially more difficult to pick up on over a videolinked interaction. Courts should be aware that for some remote participants it may be more difficult to maintain an appropriate demeanour and attitude for a court appearance when they are in a remote room that is less formal than the courtroom environment. Courts may need to assist the remote participant by being more mindful of this disparity. For example, if a judicial officer was concerned that a remote participant was behaving inappropriately, but seemed to be unaware of this, the judicial officer could adjourn proceedings to allow guidance to be given to the participant by their lawyer or court staff.

IMPROVING THE DESIGN

• The remote space should convey a sense of respect and dignity towards the remote participant that is evident to those watching from the courtroom: Ideally the material finishes and design of the remote space should convey to the remote participant a sense of respect to their needs, and convey the dignity of the court. Obviously this sense is easier to achieve in spaces that the court maintains and has control over, than multifunction spaces that are only occasionally linked to a court.

• The view of the court should convey the presence of the court to the participant: Courts should not underestimate the important role of the built environment in conveying behavioural cues to court participants. It may be more difficult for some remote participants to be able to maintain a sense of being in court when they appear from a remote space that is incongruous with the court environment in its décor and finishes. This is particularly important to bear in mind when the link is interrupted or paused, or, when the focus of proceedings is no longer on the remote participant.

• The remote facility should be comfortable, spacious, clean and private: The provision of comfortable, clean and secure surroundings are important to create a sense of respect for the remote participant, and also help foster the right behaviour and demeanour for a court appearance.
### summary of key issues for ‘thresholds’

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<tbody>
<tr>
<td><strong>1) WAITING IN SAFETY:</strong> Adequate support and facilities should be provided to the remote participant if they are required to wait for their court appearance.</td>
<td>• Provide information for remote participant as to approximate duration of waiting time • Provide appropriate reading material for the type of remote participant in the waiting area (age and gender appropriate)</td>
<td>• Provide an entry sequence that ensures safety and privacy • Provide adequate facilities in waiting areas (e.g. tea bench, toilets) with a pleasant outlook, paintings and natural light • Provide a second line of communication between remote space and the court</td>
</tr>
<tr>
<td><strong>2) TRANSITION FROM THE OUTSIDE WORLD TO THE COURT SPACE:</strong> For many remote participants the journey to their court appearance will be less formal than that which a participant attending in person at the courthouse will experience. Participants need to be aware of the serious nature of the proceedings and the importance of their participation.</td>
<td>• Provide information and support when the unassisted remote participant needs to accept the videolink call • Greet and welcome the remote participant to the court • Check sound and vision is adequate by asking if all participants can see and hear • Check the comfort of the remote participant</td>
<td>• Exaggerate the threshold through architectural features (such as lighting, change in ceiling height, change in materials, deep architraves, or colour) to help clarify the distinction between the remote court space and the waiting areas • Indicate that the remote space is ‘live’ to the courtroom through signals and/or technology</td>
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| **3) BEING IN COURT:**  
It may become difficult for the remote participant to maintain a sense that they are ‘in court’ - particularly if the behavioural cues of the remote location are at odds with the courtroom environment. Therefore remote participants may require additional assistance in order to maintain a demeanour appropriate for a court appearance. | • Make clear the distinction between being “in court” and “out of court”  
• Create a formal atmosphere to assist the remote participant to maintain a demeanour appropriate for the court setting | • The remote space should convey a sense of respect and dignity towards the remote participant and be evident to those watching from the courtroom  
• The view of the court should convey the presence of the court to the participant  
• The remote facility should be comfortable, spacious, clean and private, ideally with an outlook and natural light |
5.3 the encounter

5.3.1 Presenting the remote participant to the court

IMPROVING THE PROCESS

• Uphold presentation standards during the link:
  Instructions and training provided to court staff operating videolinks, and to judicial officers in charge of the court proceedings, should explicitly require them to direct attention to the way that the remote participant is framed in the image provided to the court. This is important as it may have significant implications both to how the remote participant feels about their presentation to the court, and on how the remote person is perceived by those sitting in the courtroom.

The checklist of important features that are outlined earlier in “planning for reconfigurations” should be monitored during the course of proceedings, and alterations made during proceedings as required to uphold the quality of the videolink. For example, a witness is giving evidence and suddenly the vision drops out. It is obviously a matter for the judicial officer to decide whether the visual information is critical to the witnesses’ testimony, and whether or not court should be adjourned so the link can be reinstated.

• If standards are not met, act immediately to rectify (including halting proceedings to follow necessary steps): Courts should empower staff operating the equipment to adjust settings to uphold standards. Judicial officers should proactively direct those adjustments and, if necessary, halt proceedings until a later date if the basic standards cannot be met. Explicit directions regarding these standards should be made, and there should be regular monitoring and feedback from judicial officers about what these minimum operating standards should be. The presiding judicial officer should be actively monitoring the quality of the link, and considering whether these issues are having an adverse effect on the presentation of the remote participant to the court, or on the remote participant’s ability to follow what is occurring in the courtroom.

• Provide capacity for multiple views during a videolink: Court staff operating the videolink should be trained to ensure that both the remote participant and any documents, or evidence, that they are referring to (displayed via a document camera or Powerpoint) are able to be viewed simultaneously (on two displays, or a split screen).
The public should always be able to view the evidence being described. Judicial officers should instruct lawyers to nominate which views they wish to have to the court officer operating the equipment.

- **Be alert for distractions and unanticipated effects:** The presiding judicial officer and court staff should be alert to the potential for possible unanticipated effects of the videolink, including unintended non-verbal cues. For example, poor placement of camera and screens might result in negative effects regarding the perception of the remote participant: “looking shifty,” for example. If the remote participant appears distracted, this may be an indication that there is other activity going on in the remote space, or that they feel uncomfortable in that setting due to something offscreen and out of sight to those in the courtroom. In that type of situation, the court should be prepared to use its power to take charge and ensure appropriate standards are met (see above) or exercise its power to change the technology and/or environmental setting.

5.3 the encounter

Figure 30: Example of editorial decisions — in these images, the court officer who was in control of the link had to choose whether it was more important at the time to see the face of the expert witness while they pointed at various places on a diagram, or whether it was more important to enlarge the diagram and have it take up the whole screen in order to make it legible. These images were taken during the Gateways Experiment August 2009 (© Emma Rowden).
• **Exert judicial control over the remote space:**
  The judicial officer presiding over the hearing should at all times have ready access to an overview of the remote space that includes a view of all portions of that space, and all fixtures, fittings, furniture and persons within it. Supporting legislation and court rules should specifically require that the presiding judicial officer is empowered to direct the conduct of any persons within the remote space and to require adjustments to the contents of the room and their configuration, and may adjourn the proceedings until such directions are complied with.

5.3.2 **Presenting the courtroom to the remote participant**

**IMPROVING THE PROCESS**

• **Uphold presentation standards during the link:** Information and training provided to support staff in remote spaces (in the case of assisted links) and to the remote participant (especially in unassisted links), should explicitly alert them to the need to notify the court if at any stage of the videolink there is any reduction in the audio or visual quality of the link, or any unexpected change in the view of the courtroom that is provided to them (for example, if an expert witness loses vision of the jury, or if a vulnerable witness is inadvertently given a view of the defendant in the courtroom).

5.3.3 **Dealing with Breakdowns and Failures**

Sometimes the videolink fails, or is operating at less than optimum. This can be due to a variety of reasons: clouds over satellite coverage, transmission interference, bad reception and so forth. Sometimes the consequences are minor. However, in other cases, it may prevent the matter continuing. Strategies need to be in place to assist participants as to how to proceed when breakdowns or failures with the technology take place.

**IMPROVING THE PROCESS**

• **Take a broad view of what constitutes a breakdown or failure and have established contingency plans:** Court staff and supervising judicial officers should be encouraged, through court protocols and guidelines, to take a broad view of what amounts to a failure or breakdown of a videolink, so that they can be planned for and action taken at an early stage to maintain the quality of the link. Failure may include:
  - any diminution in the audio or visual quality of the link;
  - any unanticipated change in the configuration of cameras and screens that impacts adversely on the ability of any participant to be provided with the views that the link was designed to provide them with;
  - any disruptive behaviour by a remote participant;
  - any incongruent behaviour by a remote participant: for example, a remote participant who appears to be behaving in a way which is inappropriate for their participation in a court hearing;
  - any apparent distress (including physical illness) experienced by the remote participant that may impair their ability to participate in the proceedings.
• Encourage all participants to notify the judicial officer if modifications are required or if a breakdown has occurred: Court protocols for the operation of videolinks should require, and empower, any courtroom participant (including the remote participant and support staff in the remote space), who becomes aware of a breakdown or failure, to immediately notify the presiding judicial officer.

• Judicial officers should facilitate management of remote space, and support for remote participant: The judicial officer presiding at the court hearing has the responsibility to investigate and manage the breakdown or failure. Courts should ensure that judicial officers have access to timely, competent technical support to enable breakdowns and failures to be investigated and remedied in a way that minimises the disruption to the court hearing. Again, this could be facilitated by a centrally-managed remote videolink “helpdesk”.

• Provide training for judicial officers as to the capacity of the technology: Judicial officers should be encouraged, through training and information, to use their powers under legislation that enables the use of videolinks, and under court rules, to deal with breakdowns and failures by imposing appropriate conditions on the use of videolinks and, where appropriate, terminating the use of the link. While the exercise of judicial discretion should be maintained in relation to the use of videolinks, legislation, rules and supporting court protocols should emphasize the importance of giving priority to maintaining the quality of the videolink communication.

5.3 the encounter

Figure 31: Conflicting environmental cues (© Emma Rowden)
Figure 32: View of CCTV equipment in a remote space (© Emma Rowden).

Figure 33a: The problem of replicating eye-contact over videolink: looking at two screens, the remote participant’s eyes will shift from side to side. The participant appears to the courtroom to be facing away when talking to the barrister, as the camera taking their image is positioned above the display that shows them the judge (© Emma Rowden).
5.3 the encounter

Figure 33b: The problem of replicating eye-contact over videolink: those in the courtroom only ever see the remote participant with downcast eyes as the placement of the camera taking their image is positioned above eye-level (© Emma Rowden).

Figure 34: To those in the courtroom, the remote participant appears distracted, and looking away with downcast eyes, while they speak to the barrister. By contrast, the remote participant would feel as if they were making eye-contact with the barrister (© Emma Rowden).
### Summary of Key Issues for ‘The Encounter’

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<th>Key Issues</th>
<th>Improving the Process</th>
<th>Improving the Design</th>
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| **1) Presenting the Remote Participant to the Court** | • Uphold presentation standards during the link, e.g. good audibility; size of participant onscreen is life-size, etc.  
• If standards are not met, act immediately to rectify (including halting proceedings to follow necessary steps)  
• Provide capacity for multiple views during a videolink  
• Be alert for distractions and unanticipated effects  
• Exert judicial control over the remote space | (No design issues have been noted here as these should be addressed at other stages of the process) |
<p>| <strong>2) Presenting the Courtroom to the Remote Participant</strong> | • Uphold presentation standards during the link |                                                                                 |</p>
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<td>• Provide training for judicial officers as to the capacity of the technology</td>
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5.4 afterwards

5.4.1 Immediately after the link has finished

**IMPROVING THE PROCESS**

- **Define clearly when the videolink has ended for the remote participant and in-court participants:** The beginning and the end of videolinks require punctuation. It is important that it is clear to the remote participant when their court participation is over AND when they are no longer visible or audible to those in the courtroom. This should take the form of verbal advice, given either by the court officer managing the videolink, or by the judicial officer overseeing it, preferably coupled with a visual/audio signal (see IMPROVING THE DESIGN) below. For example, a witness might be told: ‘thank you Ms X, your testimony is finished. The videolink will shortly be terminated. When you see [signal], you can no longer be seen or heard by the court and you are free to leave the room.’

- **Provide de-briefing information to the remote participant to ensure they have adequate follow-up with support person and/or their lawyer:** For many remote participants, some form of follow-up on their courtroom participation is important, because their absence from the physical courtroom means they are not able to obtain information on the outcome in the usual way.

- **Post-appearance links to support/lawyer:** A defendant being remanded on a prison videolink will usually need to clarify the outcome with their lawyer; a vulnerable victim witness will need some counselling from their support person and information as to the outcome of the case. Attention to these matters is largely a matter for the work practices of defence and prosecution lawyers. However, the court can encourage and facilitate appropriate de-briefing by providing appropriate facilities for secure communication (see Appendix B) and providing appropriate signals. For example, a defendant might be told, as part of the wording when their matters are concluded that: “your lawyer will contact you after court concludes to answer any questions you may have.”

**IMPROVING THE DESIGN**

- **Provide facilities to enable pre- and post-appearance links between remote participant and their support person and/or their lawyer:** Mul-
Tipurpose remote spaces should be a standard feature of courthouses. They can enable a lawyer to consult their client before and after a hearing (see Appendix B).

5.4.2 Ongoing IMPROVING THE PROCESS

• Undertake regular reviews of videolink procedures (establish a working party): Courts should conduct regular reviews of the use of videolinks, the report from which could form part of the court’s annual report. This review should be undertaken by the working party recommended below and should contain recommendations for improvements/addressing identified problems. The review should incorporate perspectives from court staff, judicial officers, and all categories of remote participants, obtained via the feedback mechanisms discussed below.

• Obtain feedback from court users on the remote court experience: There should be a timely opportunity for courtroom participants to provide feedback on their experience with the operators of the videolink, so that issues relating to the management of the technology and any technical difficulties are detected at an early stage. In particular, there should be:
  a) attention given to the workload of courtroom staff operating the technology;
  b) the level and timeliness of specialist technical support available to the courtroom;
  c) and the level of satisfaction of the remote participant and those in the courtroom with the following aspects of the link:
     - availability of views of other participants;
     - availability of views of documents and exhibits;
     - audio quality;
     - picture quality;
     - availability, quality and operation of document cameras or other tools to display documents and exhibits.

For the remote participant, this feedback might be obtained by means of a short questionnaire administered aurally, in hard copy or online within 24 hours of the use of the videolink. In the case of vulnerable witnesses, feedback might be sought from their support person. Court staff, lawyers and judges could be invited to provide such feedback via an online survey. Courts should also regularly seek feedback from members of the public attending in the capacity of jury members and courtroom observers about these issues. This could be incorporated within existing surveys of jury and public satisfaction.

• Create regular opportunities for reflection and feedback from the judiciary, court staff and others appearing by videolink: There need to be regular opportunities for feedback on the use of court videolinks to be considered in a way that enables issues and problems to be identified and solutions to be devised. Systemic issues are best addressed by means of a working party, reporting to the court or courts within each jurisdiction, that includes representatives of all agencies involved — courts, prosecution, prisons, forensics, legal aid, defence bar. Representatives on this working party should be staff who work at an operational level with the technology and the working party’s terms of reference should empower it to make recommendations to the management of each agency concerning:
   - changes to operating procedures for videolinks;
   - adjustments to supporting information and protocols;
- training in the use and operation of videolink;
- recommendations for changes in the configuration, type and quality of the technology;
- recommendations for changes in the configuration, type and quality of the built environment (and moveable furniture) that supports the technology in the court room and in the place from which the remote participant appears.

• Maintain accurate records of both CCTV and videoconference use, as well as other platforms for audio-visual links such as Skype, to help target improvements: Details to be included:
  - length of videolink and who established the link (e.g. for a videoconference which location made the call);
  - type of proceeding; and,
  - detailed locational information (site, jurisdiction, videoconference suite).

An example of a proforma we have developed that might be adopted can be found as Appendix D. Cross-jurisdictional discussions should ensure that record keeping is consistent across states.

IMPROVING THE DESIGN
• Regularly update the design guidelines for remote facilities and courtrooms (Appendix B), and selection of remote facilities (Appendix C) based on feedback and recommendations from the review process: Guidelines for the design and operation of all relevant facilities should be regularly viewed to incorporate feedback and recommendations from the working party referred to above.
### Summary of Key Issues for the ‘Afterwards’ Stage

#### Key Issues

1) **Immediately After the Link Has Finished**

- Define clearly when the videolink has ended for the remote participant and in-court participants.
- Provide de-briefing information to the remote participant to ensure they have adequate follow-up with support person and/or their lawyer.

2) **Ongoing**

- Undertake regular reviews of videolink procedures (establish a working party).
- Obtain feedback from court users on the remote court experience.
- Create regular opportunities for reflection and feedback from the judiciary, court staff and others appearing by videolink.
- Maintain accurate records of both CCTV and Videoconference use, as well as other platforms for audio-visual links such as Skype, to help target improvements (see Appendix D for suggested proforma).

#### Improving the Process

- Provide facilities to enable pre- and post-appearance links between remote participant and their support person and/or their lawyer (see Appendix B).

#### Improving the Design

- Regularly update the design guidelines for remote facilities and courtrooms (Appendix B), and selection of multipurpose remote facilities (Appendix C) based on feedback and recommendations from the review process.
6. ‘before and after’ case studies

The following section attempts to demonstrate how the above recommendations to improve the design of remote facilities might be implemented.

By way of two case studies, we consider the issues involved in designing for:
1. a remote space in a heritage building;
2. existing purpose-built remote spaces.

For the first example, we also provide suggestions to improve existing conditions (for example, when funds are not currently available for more substantial changes to the built fabric). When more substantial changes are possible, we have suggested how the built environment might be altered to create environments consistent with the ‘best practice’ principles as articulated in these guidelines.

For new buildings, the design should follow the guidance outlined in Appendix B.

Figure 35: View of Remote Space in a heritage building
(© Emma Rowden).
6.1 a remote space in a heritage building

Figure 36: Clockwise from top: looking back towards door; view of screens; view of Judge; self-view on left screen, Judge’s overview on right screen (© Emma Rowden).
ANALYSIS OF THE EXISTING SPACE

Key concerns:

- **Dimensions**: Narrow and claustrophobic space (although this is partly counteracted by the generous ceiling height). In particular, the width of room is inadequate for the comfortable movement of a participant and their support person.

- **Finishes**: Exposed cabling and incongruous behavioural cues to the court setting. Clutter, exposed cabling and extraneous furniture should be removed.

- **Technology**: Position of cameras and closeness of seating to screens encourage a noticeable movement of the remote participant’s head from side to side as they switch their focus from the left screen to the right and vice versa. In other words, there is not enough depth between remote participant and the images that they are focusing on.

- **Secure waiting area**: Currently there is no secure private waiting area attached to this space. A separate entry/exit to and from this space without going through the main public entrance would be ideal.

- **Technology**: Table mounted microphone creates greater risk of feedback; person positioned close to camera (“eye-balled”); two screen configuration coupled with close position to technology means that the person is more likely to be switching their head back and forth between monitors.

Key features to potentially retain:

- **Threshold**: While the partition makes the room even smaller, and should be removed, it perhaps helps to create a sense of the threshold.

- **Vertical Dimension**: Floor to ceiling height at over 3.5m is generous (well above the usual 2.5 - 2.7m domestic-scaled ceiling height), and helps compensate for the narrow dimension of the room.
6.1 a remote space in a heritage building
remedial changes (minimal alteration to built fabric)

- Retain separation between equipment and table for participant. Move back table and chair for remote participant to allow them to find a comfortable distance from the screens.
- Remove partition and extraneous furniture.
- New single screen videoconferencing unit; camera placed to simulate eye-contact as closely as possible.
- New judge’s overview camera.
- New potplant and/or artwork.
- New floor-mounted data panel for new document camera, if required, or use of tablet / laptop.
- New comfortable height-adjustable chair (non-swivelling).
- New ceiling mounted microphone.
- Remove air conditioning unit, replace with floor vents or discrete system to rear of room adjacent to door. Restore window to original and use translucent glass for privacy where required.
- Finishes: Exposed cabling and incongruous behavioural cues to the court setting. Clutter, and extraneous furniture should be removed; cabling should be concealed.

REMOTE SPACE IN A HERITAGE BUILDING PLAN @ 1:50

REMOTE SPACE IN A HERITAGE BUILDING SECTION @ 1:50
proposed ‘best practice’ changes (including alterations to built fabric)

RE-DESIGNED REMOTE WITNESS SUITE WITHIN A NEW “SECURE AREA” FACILITY:
(Note: this is a hypothetical solution only; this plan does not take into account any heritage restrictions and/or other concerns with the layout of the entire floorplan such as amenities).

- **Larger Remote Witness Suite**: A generous sized room, (well over the min. 3.5m x 3.5m room required).
- **Integrated Technology**: technology is able to be better integrated into joinery due to enlarged space provided, can also allow for improvements to technology.
- **Greater natural light and views to enhance comfort**: two windows to outside (with operable blinds to adjust natural lighting intensity and direction). Ability to look outside can be balanced against amount of daylight desired, or theoretically optimum.
- **Large waiting area and amenities**: generous waiting area, with ability to have borrowed views and light through the remote witness suite, with shared secure kitchenette and secure bathrooms (with separate air-lock), and separate entrance from outside. Potential to use ‘digi-glass’ in window openings to existing light well (or lift core that is adjacent to waiting area) that could have relaxing images of landscape, back-lit to create impression of light.
- **Good proximity to Victim Support Offices**: This allows for the waiting area to double as a waiting area for those wishing to attend court in person, but who need a secure space to wait.
6.2 existing purpose-built remote spaces

ANALYSIS OF THE EXISTING REMOTE SPACES

Key concerns:

- **Dimensions**: Many of the spaces are of insufficient depth to cater for adequate distances between screen and viewer to enable a view of the remote participant’s upper torso in court.
- **Waiting**: Insufficient area and lack of natural light and views for long-periods of waiting inside secure area. WC (toilet) has no air-lock. Other adjacent general waiting room is not secure.
- **Multi-purpose remote room**: Need to provide a multi-purpose remote space for lawyers to access clients at remand centre and/or victims to access other services remotely.
6.2 existing purpose-built remote spaces

- **Dimensions:** Two of the existing spaces enlarged to accommodate newer technologies. One remote space enlarged to provide greater amenity. Fourth remote space converted to multipurpose remote space. Different sizes create flexibility depending on needs of different users.
- **Waiting:** Larger waiting area that provides greater amenity - natural light and views - as well as more room to undertake different activities, including watching television; can have pot-plants and other calming features. This space can double as a secure waiting area for other vulnerable court participants.
- **Multi-purpose remote room:** A multi-purpose remote space for lawyers to access clients at remand centre and/or victims to access other services remotely. Control access prevents one door being used when other in operation to ensure security of facilities, while providing optimum utilisation of remote capacity.
- **WC:** New WC (toilet) has airlock, and potential for ventilation.
7. Glossary

**AEC (Acoustic Echo Cancellation)** – The method of cancelling out far end speech from the local microphones. If not implemented a feedback loop is created whereby the local person speaking would hear their voice come back from the far end. AEC is one component of DSP.

**DSP (Digital Signal Processor)** – Utilising of specialist signal processing in the digital realm to modify the audio signals. Can consist of many different processors, including equalisation, gain, compression and limiting, AEC, splitting and mixing of audio signals.

**Distributed Court** – The term distributed court is preferred over ‘virtual court’ as it implies the distribution of the court space over several locations, without the implied ‘insubstantial’ or ‘fake’ connotations of the term ‘virtual’ (see Rowden 2011). In this definition, the distributed court has one sitting judge, as distinct from the example given in the Family Law Act (Australia) that defines a court constituted by two or more judges sitting at the same time but in different places linked by audio-visual technologies as a ‘split court,’ stating: “for the purposes of determining which law to apply in proceedings in which a split court is sitting, the Court is taken to be sitting at the place at which the presiding Judge is sitting.” Family Law Act (1975), s27(3). (Rowden, 2011: 18).

**$D_{wl}$ Weighted Sound Level Difference** – A convenient, single figure value representing the overall difference in sound level (across a broad frequency range) required between two rooms.

**EAD (Equivalent Acoustic Distance)** – By amplifying a talker’s speech, a sound system reduces the apparent acoustic distance between a talker and distant listener. The equivalent acoustic distance defines the resulting acoustic distance between the talker and listener.

**H.264SVC** – H.264 is a video compression standard developed by the ITU (International Telecommunications Union) Video Coding Expert Group together with ISO and IEC Joint Working Group, probably best known as the video compression standard used for Blu-ray discs. SVC (Scalable Video Coding) is the name given to the Annex G extension, which standardises the encoding of
high quality video bitstreams that contain subset bitstreams representing lower resolution for lower bitrates.

**IPv6** - IPv6 (Internet Protocol version 6) is intended to succeed IPv4, which is the current communications protocol for the internet. IPv6 address consist of eight groups of four hexadecimal digits separated by colons, providing approximately $3.4\times10^{36}$ unique addresses compared to only $4,294,967,296$ addresses world-wide for IPv4. IPv4 addresses consist of four groups of three digits separated by a decimal point.

**P-I-P (Picture-in-Picture)** – an inset image (usually positioned to the bottom right hand corner of a screen) during a videoconference that provides a second viewpoint (for example, a close-up view of the Judge’s face or a self-view of the remote participant).

**Remote Witness Room (or, Remote Witness Facility)** – remote witness rooms have now become a standard feature of Australian courthouses, built since the early 1990s, with guidance for architects as to their purpose, minimum requirements and features provided in court design guidelines. In some older court buildings, or in more remote or regional areas, the total accommodation provided might be a single room positioned off a main public corridor, with no separate access. In some very remote communities, vulnerable and child witnesses may have to give their evidence from an interview room in a police station or in a multipurpose room. The videolink equipment (CCTV or videoconferencing) is sometimes placed on a movable trolley, or is sometimes built-in, and the brief for the room generally results in a size from anywhere between eight to fifteen square metres. The ceiling heights of remote witness rooms and their associated facilities are generally under three metres compared those of courtrooms that are generally loftier and higher. In more recent designs, the remote witness room may also be attached to a private and secure area — the remote witness facility — which includes a waiting area and separate amenities including bathroom and kitchenette / tea bench facilities adjacent. Sometimes these spaces have windows, or access to natural light, but this is not always the case. Child witness units (that are specialist remote witness facilities provided as a comprehensive support service) may also include a place for the child’s family to wait, as well as areas to view pre-recorded testimony, or the police video-recorded interview, prior to appearance over the videolink for the cross-examination (Adapted from: Rowden, forthcoming).

**RT (Reverberation Time)** – a key design parameter used by acoustic engineers, this represents the time taken for a sound in a room to decay by 60dB after the sound source is turned off.

**SIP (Session Initiation Protocol)** – defines a signalling protocol widely used for controlling voice and video calls over IP.

**STI (Speech Transmission Index)** – a standardised objective measure of speech intelligibility and the degree of distortion imparted by the audio system and room acoustics; where 1.0 indicates perfect reproduction and 0 indicates that
the reproduced signal bears no relation to the input.

**URI (Uniform Resource Identifier) Dialling** –
Provides an email-like naming convention “fred@mycompany.com” that can be used for a video conferencing address.

**Threshold** – A term most widely used in architecture to denote the transition from one setting to another. A threshold may mean movement between inside and outside, or the transition between ‘on air’ and ‘off air’ during an audio-visual link. Therefore, thresholds may be physical (such as crossing a doorway, a window or another opening), or mental (entering a new social setting).

**Videolink** – used here as a cover-all term to denote both CCTV (closed-circuit television) and videoconferenced-enabled links. This term is used often in the literature, particularly in those written within a UK-context.
8. selected bibliography


appendix a: table of australian legislation enabling remote court participation by videolink (as at 30th June 2012)

### For vulnerable witnesses

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Applies to</th>
<th>Presumption in favour</th>
<th>Pre-recording</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth</td>
<td>Family Law Rules 2004 (Cth) s 15YI</td>
<td>Child witness. Child witness in ‘sex tourism’ and related offences.</td>
<td></td>
<td></td>
<td>Support person may be present Support person/ interpreter/ and/or court office may be present</td>
</tr>
<tr>
<td>NSW</td>
<td>Criminal Procedure Act 1986 (NSW) ss306ZB</td>
<td>Witnesses with intellectual disability/ cognitive impairment or who, because of their circumstances or the circumstances of the case, would be specially disadvantaged if not treated as a vulnerable witness</td>
<td>Yes</td>
<td>Yes (for evidence of prior statements) – S 206S</td>
<td>Support person/ interpreter/ and/or court office may be present</td>
</tr>
<tr>
<td>VIC</td>
<td>Criminal Procedure Act 2009 (VIC) s369</td>
<td>Children and those with a cognitive impairment</td>
<td>Yes</td>
<td>Yes</td>
<td>Presence of support person</td>
</tr>
<tr>
<td>QLD</td>
<td>Evidence Act 1997 (QLD) s 21AB(a)</td>
<td>Children</td>
<td>Yes</td>
<td>Yes</td>
<td>Presence of support person/s</td>
</tr>
<tr>
<td>SA</td>
<td>Evidence Act 1929 (SA) s 4,13.</td>
<td>Witness who is likely to suffer stress or embarrassment. Child or adult victim of sexual or other serious assault. Witnesses with intellectual disability/cognitive impairment or who, because of their circumstances or the circumstances of the case, would be specially disadvantaged if not treated as a vulnerable witness</td>
<td>Yes</td>
<td>Yes</td>
<td>Availability of facilities Lack of prejudice to any party</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Legislation</td>
<td>Applies to</td>
<td>Presumption in favour</td>
<td>Pre-recording</td>
<td>Conditions</td>
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<tr>
<td>WA</td>
<td>Evidence Act 1906 (WA) ss 106R, 106I, 106K</td>
<td>Person declared to be ‘special witness’ on the grounds of intellectual, mental or physical disability, age, cultural background, relationship to any party to the proceeding, the nature of the subject matter of the evidence or any other factor the court considers relevant.</td>
<td>Yes</td>
<td>Yes</td>
<td>Support person and ‘communicator’ may be present (function of latter to explain questions to child and explain child’s answer to court)</td>
</tr>
<tr>
<td>TAS</td>
<td>Evidence (Children and Special Witnesses) Act 2001 (TAS) ss 3, 6, 8</td>
<td>Person declared to be ‘special witness on the grounds of intellectual, mental or physical disability, age, cultural background, relationship to any party to the proceeding, the nature of the subject matter of the evidence or any other factor the court considers relevant.’ Child witness in sexual assault etc, cases.</td>
<td>Yes</td>
<td></td>
<td>Court officer and support person may be present.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Legislation</td>
<td>Applies to</td>
<td>Presumption in favour</td>
<td>Pre-recording</td>
<td>Conditions</td>
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<tr>
<td>NT</td>
<td>Evidence Act 1939 (NT) s 21A</td>
<td>Child or adult victim of sexual or other serious assault, witnesses with intellectual disability/cognitive impairment or who, because of their circumstances or the circumstances of the case, would be specially disadvantaged if not treated as a vulnerable witness</td>
<td></td>
<td></td>
<td>Interests of justice Whether the urgency of the matter renders it inappropriate</td>
</tr>
</tbody>
</table>

**For other categories of witness**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Type of witness</th>
<th>Presumption in favour of remote</th>
<th>Applies to</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth</td>
<td>Evidence (Audio and Audio Visual Links) Act 1998 (NSW) s 5BAA</td>
<td>‘government agency’ witness e.g. government forensic scientists</td>
<td>Yes – but court can make an exception where the evidence is contentious, and it is ‘in the interests of the administration of justice’ for the witness to appear physically before the court.</td>
<td>NSW courts taking evidence from within NSW</td>
<td>Link available or ‘reasonably’ available.</td>
</tr>
<tr>
<td>NSW</td>
<td>Evidence (Audio and Audio Visual Links) Act 1998 (NSW) s 5BAA</td>
<td>‘government agency’ witness e.g. government forensic scientists</td>
<td>Yes – but court can make an exception where the evidence is contentious, and it is ‘in the interests of the administration of justice’ for the witness to appear physically before the court.</td>
<td>NSW courts taking evidence from within NSW</td>
<td>Link available or ‘reasonably’ available.</td>
</tr>
</tbody>
</table>
**For any witness**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Applies to</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth</td>
<td><em>Federal Court of Australia Act 1976 (Cth)</em> s 47A-C, 59(2A); <em>Family Law Act 1975 (Cth)</em> s 102C-F, 123(1)(ma); <em>Federal Magistrates Act 1999 (Cth)</em> s 66, s 69(1);</td>
<td>Federal, Family and Federal Magistrates’ courts – taking evidence from within Australia</td>
<td>Link available or ‘reasonably’ available. All ‘appropriate’ persons must be able to see and hear. Additional conditions can be imposed under court rules or by the judge in the particular case.</td>
</tr>
<tr>
<td>NSW</td>
<td><em>Evidence (Audio and Audio Visual Links) Act 1998 (NSW)</em> s 5B</td>
<td>NSW courts – taking evidence from within NSW and interstate</td>
<td>Link available or ‘reasonably’ available. ‘convenience’ Whether the witness will in fact appear if a link is used ‘fairness’ ‘interests of justice’ (where the link is opposed) Additional conditions can be imposed under court rules</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Legislation</td>
<td>Applies to</td>
<td>Conditions</td>
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<tr>
<td>VIC</td>
<td><em>Evidence (Miscellaneous Provisions) Act 1958 (VIC)</em> s 42E</td>
<td>VIC courts – taking evidence from within VIC and interstate</td>
<td>‘fairness’ (implied) All ‘appropriate’ persons must be able to see and hear As set out in court rules.</td>
</tr>
<tr>
<td>QLD</td>
<td><em>Evidence Act 1997 (QLD)</em> s 39R, <em>Evidence Act 1997 (QLD)</em> s 39E</td>
<td>QLD courts – taking evidence from within QLD QLD courts – taking evidence from interstate</td>
<td>Additional conditions can be imposed under court rules</td>
</tr>
<tr>
<td>SA</td>
<td><em>Evidence Act 1929 (SA)</em> s 591Q, <em>Evidence Act 1929 (SA)</em> s 59IE</td>
<td>SA courts – taking evidence from within SA SA courts – taking evidence from interstate</td>
<td>Additional conditions can be imposed under court rules Link available or ‘reasonably’ available.</td>
</tr>
<tr>
<td>WA</td>
<td><em>Evidence Act 1906 (WA)</em> s 121(1)-(2), <em>Family Court Act 1997 (WA)</em> s 219AB-AE</td>
<td>WA courts – taking evidence from within WA and interstate. Family Court of WA – taking evidence from within Australia</td>
<td>Link available or ‘reasonably’ available. ‘interests of justice’ As set out in court rules? All ‘appropriate’ persons must be able to see and hear Additional conditions can be imposed under court rules</td>
</tr>
</tbody>
</table>

appendix a: table of australian legislation enabling remote court participation by videolink
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<thead>
<tr>
<th>Jurisdiction</th>
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</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>Evidence (Audio and Audio Visual Links) Act 1999 (Tas) s 6</td>
<td>Tasmanian courts – taking evidence from within Tasmania.</td>
<td>Link available or ‘reasonably’ available. ‘convenience’ ‘fairness’</td>
</tr>
<tr>
<td>NT</td>
<td>Evidence Act 1939 (NT) s 49E-F</td>
<td>Northern Territory courts – taking evidence from within the NT.</td>
<td>Link available or ‘reasonably’ available. ‘convenience’ ‘fairness’ All ‘appropriate’ persons must be able to see and hear Additional conditions can be imposed by the judge in the particular case.</td>
</tr>
<tr>
<td>ACT</td>
<td>Evidence (Miscellaneous Provisions) Act 1991 (ACT) ss 31, 32(1)</td>
<td>ACT courts (other than Supreme and Magistrates’ Courts) – taking evidence from within the ACT</td>
<td>Link available or ‘reasonably’ available. ‘convenience’ ‘fairness’</td>
</tr>
<tr>
<td></td>
<td>Evidence (Miscellaneous Provisions) Act 1991 (ACT) s 20(1)</td>
<td>ACT courts (other than Supreme and Magistrates’ Courts) – taking evidence from outside the ACT</td>
<td>Link available or ‘reasonably’ available.</td>
</tr>
</tbody>
</table>
### Defendants – prisonlinks

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Applies to</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NSW</strong></td>
<td><em>Evidence (Audio and Audio Visual Links) Act 1998 (NSW)</em> s 5B</td>
<td>All appearances other than initial bail hearing, enquiry into fitness to stand trial and trial.</td>
<td>Link available or ‘reasonably’ available. ‘convenience’ ‘fairness’ Accused willing to appear by av link</td>
</tr>
<tr>
<td><strong>VIC</strong></td>
<td><em>Evidence (Miscellaneous Provisions) Act 1958 (VIC)</em> s 42K-42S</td>
<td>Bail applications, remand, special mentions, adjournments, arraignment, except for first appearances (unless Defendant consents), committals, trials, sentencing hearings, appeals and inquiries into fitness to stand trial (unless the court otherwise directs).</td>
<td>Use must be ‘consistent with the interests of justice’</td>
</tr>
<tr>
<td><strong>QLD</strong></td>
<td><em>District Court of Queensland Act 1967 (QLD)</em> s 110C(3); <em>Justices Act 1886 (QLD)</em> s 178C(3);</td>
<td>Bail remand or appeal hearings – in other proceedings by consent.</td>
<td></td>
</tr>
</tbody>
</table>

Appendix a: Table of Australian legislation enabling remote court participation by videolink
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<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Applies to</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>Evidence Act 1929 (SA) s 59IQ</td>
<td>All appearances, other than enquiry into fitness to stand trial, first appearance on indictable offence, there are ‘good reasons’ for personal appearance, or Defendant is appearing in other matters for which personal appearance is required.</td>
<td>Existence of facilities for remote appearance Parties must have reasonable opportunity to object</td>
</tr>
<tr>
<td>WA</td>
<td>Criminal Procedure Act 2004 (WA) ss 77(4), 88, 140-141</td>
<td>All appearances, other than first appearances, unless court otherwise directs.</td>
<td>Reasonable availability of link.</td>
</tr>
<tr>
<td>TAS</td>
<td>Justices Rules 2003 (Tas) s 67</td>
<td>Any purpose, unless court otherwise directs.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
* In effect rendering the provision inoperable as there are no other ACT courts.*
appendix b:
guidelines for the design and construction of remote court facilities and videolinked courtrooms

These guidelines outline the following:

1. Minimum standards for the design and construction of new Dedicated Remote Facilities, or, the upgrading of existing facilities
   a. AUDIO SYSTEM
      (including Design Criteria)
      - Microphones
      - Audio Signal Processing
      - Loudspeakers
      - Adjustable Volume

   b. VIDEO SYSTEM
      - Display Quality
      - Life-size proportions
      - Eye-contact
      - Display Placement for multiple views
      - Self-View Function
      - Judicial Officer Overview
      - Clear distinction evident to remote participants between being “in court” and “out of court”

   c. BUILDING INFRASTRUCTURE
      - Cabling
      - Structural Loads

   d. NETWORK INFRASTRUCTURE
      - Facilities
      - Software Clients and BYOD
      - Management & Network Control
      - Firewall Traversal
      - The Future

   e. REMOTE SPACE DESIGN
      (including Acoustic and Lighting Design Criteria)
      - Room Width
      - Room Depth
      - Room Volume
      - Furniture & Loose Fittings
      - Ambience
      - Lighting
      - Background Plane
      - Integration

- Document cameras & audio-visual demonstrative Aids
- Journey to Court
- Acoustics
- Natural Light & Views
- Waiting areas
- Articulating the threshold
2. **Minimum standards for courtrooms that can host a videolinked connection**

   a. **AUDIO SYSTEM**
      (including Audio Design Criteria)
      - Loudspeaker system
      - Microphones
      - Audio Signal Processing
      - Transcript & Recording systems

   b. **VIDEO SYSTEM**
      - Small Format Displays
      - Videoconferencing Display for the Remote Participant
      - Additional Displays
      - Camera
      - Pre-Set Camera Positions
      - Life-size proportions
      - Judge Overview Display

   c. **INFRASTRUCTURE**
      - Cabling
      - Structural Loads
      - Network Bandwidth

   d. **COURTROOM DESIGN**
      - Integration and Ambience
      - Natural Light & Views

   e. **ADDITION OF MULTIPURPOSE REMOTE SPACE FOR FOLLOW-UP VIDEOLINKS**
      - Location within the courthouse
1. Minimum standards for the design and construction of new Dedicated Remote Facilities, or, the upgrading of existing facilities

These guidelines outline the recommended standards for the design of dedicated remote witness facilities, or the upgrading of existing facilities. When considering designing a multipurpose space within another justice agency, it should be considered primarily in terms of its design as a Remote Witness Facility with the ability to incorporate other functions rather than vice-versa. The goal is to achieve effortless communication, both in aural and visual domains, so participants are free to concentrate on the subject matter rather than on discerning the spoken word and visual communication of the other party. It is particularly important to note that an absence of complaints from an existing facility does not necessarily imply that there are no difficulties with speech intelligibility or visual issues.

a. AUDIO SYSTEM
• General: Remembering that remote participants may not be practised speakers but nervous, softly-spoken witnesses whose first language is not English, the audio system and room acoustics must be designed holistically and to a high standard that ensures speech is reliably captured and reproduced with clarity, naturalness of tone and freedom from noise.

The adjacent design criteria provides a minimum standard for the design of the audio and electroacoustics system for new or refurbished remote facilities. The services of a qualified acoustician should be sought to interpret the design criteria according to the specific demands of each project (see glossary for definitions of EAD and STI).

• Microphones:
In general, microphones should be placed as close to the talker position as possible (and away from noise sources such as air conditioning, fan driven AV equipment etc) to maximise the ratio of useful direct speech to detrimental room reverberance and background noise. Microphones

DESIGN CRITERIA FOR AUDIO SYSTEM SUGGESTED BY ICE DESIGN

Performance Target
The loudspeaker system for remote facilities should be designed to achieve the following performance requirements at the listener position:

**Frequency response**
[direct field + 150ms Half Hanning time window]
+/-2dB over range 130 Hz to 12kHz with 1 octave wide smoothing (listener assumed to be on axis to loudspeaker)

**EAD** <2.2m (to recreate listener conditions equivalent to those in close conversation)

**STI** > 0.70 (measured using a line-level signal input to local equipment)

**Minimum sound pressure level**
70dB Leq(lin) at listening position when measured with band-limited pink noise (125Hz to 12kHz)
should be discrete to ensure the technology does not present an unnecessary visual distraction or otherwise inhibit participants behaving in a natural manner when communicating over videolink. Three generic types of microphone are commonly encountered in remote facilities, as listed below:

**Quarter-space ceiling microphone:**
Common versions of this device comprise of a large format, inverted L shape perspex construction, suspended immediately below the ceiling and out of sight for the camera and the remote conference participant. It is suited to remote conferencing applications only but has the distinct advantage of a wide pickup pattern that is not overly sensitive to variations in speaker position in the room. Provided the room acoustics and ambient noise levels are properly designed, this option presents a compelling solution for remote facilities.

**Gooseneck microphone:**
A desk-mounted gooseneck microphone provides the most robust pickup characteristics if positioned correctly though, in remote confer-
ence applications, its mounting position directly in front of the participant may be unduly visually prominent. The exact position of its mounting position shall allow sufficient space for the positioning of books and papers between the participant and the microphone whilst minimising noise disturbance from paper documents and keyboards. The microphone mount must provide good vibration isolation to minimise the transfer of ‘bumps’ to the desk into the microphone.

**Low profile boundary microphone:**
The use of low profile boundary microphones on top of the table is generally discouraged as they are particularly sensitive to bumps to the desk and noise generated by documents being passed over the table surface. Furthermore, due to their low profile, there is a tendency for papers to be placed over microphones rendering them ineffective. Both issues can cause significant interference to transmitted speech signals without the remote participant even being aware.

- **Audio Signal Processing:** It is strongly recommended that every local audio system incorpor-
rates a dedicated audio digital signal processor (DSP) to enable full equalisation and alignment of each audio input and output chain in the remote facility. For most applications, the required processing capabilities exceed the functionality normally offered in videoconferencing codecs. Effective, independent and adaptive DSP based acoustic echo cancellation (AEC) shall be employed on each and every microphone input to reduce echo and feedback. AEC processing must be installed in both court and remote sites to reduce echo back into respective locations. The microphone gating (or automatic selection of the microphone being spoken into) is a vital component in achieving clear reliable transmission of speech. However, care must be taken when commissioning the system so that no speech is lost due to the gating operation.

- **Loudspeakers**: A single high quality full range loudspeaker must be selected for the reproduction of speech and transmitted audio evidence from the court. The loudspeaker should be placed as close as possible to the video image(s) of those speaking in order to co-locate vision and sound and create a more natural communication experience for the remote conference participant. The loudspeaker and mounting arrangement should be discrete to ensure the technology does not present an unnecessary visual distraction or otherwise inhibit participants behaving in a natural manner when communicating over videolink. (The use of loudspeakers within the video monitor is discouraged due to the poor sound quality normally associated with these installations). Refer to the side panel for performance requirements of the audio system on p105.

- **Adjustable volume**: The remote participant (or their delegated support person) should be able to adjust the sound they receive from the courtroom to a comfortable level. Information should be made available to the remote participant so that they are aware that they may do this.

- **Display quality**: High-definition, professional grade screens supporting multiple signal formats up to 1080p resolutions are required to achieve a sufficiently detailed image of far end participants and transmitted document images to achieve a convincing ‘telepresence’ experience for all parties involved. A low reflectivity finish is preferred to reduce distracting reflections of the participant under the videoconferencing lighting system. (Be wary of an increasing industry trend to procure domestic display models with lower colour depth, sharpness and longevity).

- **Life-size proportions**: Screen size should be adequate to allow courtroom participants to appear life-size to remote participant, and vice-versa. Generally this is achieved with a 50” display. Although a portrait, rather than landscape, orientation of the screens would be better suited to present a participant’s head and torso and enable a greater amount of body language to be captured at either end, current industry practice dictates that landscape should be used for reli-

**c. VIDEO SYSTEM**

Based on current best practice, the video system infrastructure should be designed to support resolutions of up to 1080 lines (1080p). High definition cameras of at least 720 lines (720p) should be chosen.
Gateways to Justice: design and operational guidelines for remote participation in court proceedings

• **Display placement for multiple views:** More than one view of the courtroom is often required and recommended (e.g. one screen showing judge, another showing bar table). The two views should be arranged in conjunction with the placement of the camera, to be comfortably viewed by remote participant and to minimise instances where the remote participant looks away from the lens of the camera. There is a strong case for providing two cameras in remote facilities, one to serve the Judge (co-located with the Judge’s image) and one to serve the bar table and the rest of the courtroom (co-located with the bar table image). However, this would have to be implemented as part of a consistent policy for the corresponding courtroom video system designs.

• **Self-view function:** The remote participant should be able to check how they will look to the courtroom. A self-view function should be made available that can be operated by the remote participant themselves, including being able to be turned off for the duration of the court appearance, as some participants may find it too distracting. Self view may occur as a picture-in-

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able compatibility with other sites and videoconferencing platforms. There may be a requirement for larger display sizes when “side by side” images, or multi-site conferences are used on a single display, as this limits the individual screen sizes associated with each remote image.

• **Eye-Contact:** Cameras must always be co-located with the display that corresponds to the image of the far-end participant in the courtroom. Ideally, the camera would be placed in line of sight, i.e. where the remote participant would look to view the faces of those in the courtroom, in an attempt to simulate eye-contact. Practical limitations dictate that the camera is usually best positioned immediately below the display.

**Future Technologies:** best practice would involve the placement of the camera in line-of-sight, behind the eye-line of the remote participant. Emerging products include a solution that incorporates “one-way” mirrored glass to conceal the camera behind the veiling reflection of the far-end camera image – however, these display devices currently require a depth of around 1m behind the front of the equipment (see DVE example shown Figure 22, p51).

Figure B2: ‘lifesize’ proportions - tests should be done in court to check the appearance of the size of the head and torso of the videolinked witness, with the size of a witness in the witness box (© Emma Rowden).
picture on a main display, or it could be pre-viewed on a separate confidence monitor which could also be used to confirm the transmitted image from remote facility document cameras etc.

- **Judicial Officer Overview**: the presiding judicial officer should be provided with an overview of the remote space that provides a complete view the room, so that they can see all persons in it, including any support person/s and court officers. This image is ideally provided via a separate screen to the judicial bench.

- **Clear distinction evident to remote participants between being “in court” and “out of court”**: this may be achieved by a signal to indicate that the space is ‘live’ to the courtroom. This signal should be as unobtrusive as possible, to be noted to the participant so that they are aware of it, and able to be turned off by the remote participant (or support person) should they so desire.

- **Document cameras and audio-visual demonstrative aids**: Document cameras and a connection point for computer generated evidence should be available as standard practice in all remote participation facilities, and in the courtroom, to enable the display of documents, exhibits, photographs etc. Appropriate tools should be available to enable audio or audiovisual material to be conveyed to the courtroom or from the courtroom to the remote space, to that it is visible and audible to those in the courtroom and to the remote participant.

- **Journey to Court**: The change of location for the remote participant means that the spatial experience of their journey to court will be very different than had they appeared in-person.

Future technologies: With advances in the development of immersive, virtual reality technologies, it could be possible in the future to design a ‘virtual’ journey to court that recreates something of the spatial experience of a court participant as they enter a court building, proceed to the courtroom, and enter that courtroom to take their designated place, such as the witness stand. While a virtual reality experience may not be desirable for some remote participants, for example the vulnerable child witness or victim of sexual assault, its use could be considered for other categories of court participants, as appropriate technologies become more widely available and affordable.

c. **BUILDING INFRASTRUCTURE**

- **Cabling**: As a minimum, consideration should be given to providing cabled services at the following locations:
  - Remote Participant Position: floorbox or wall plate adjacent to desk to include power, data, telephone (including privacy intercom for use during videoconferences), laptop AV input, document camera input, microphone input if desk mounted (allowing a second input for interpreter, if required), confidence monitor video output.
  - Front Wall: wall plate at an appropriate height to include power, data (for control), camera(s) video input, display(s) output, loudspeaker output or audio output. Consider fibre provisions if long cable runs are required between camera and displays back to a central equipment rack.
  - Ceiling: camera input for (for judicial
office overview), microphone input.
The decision to implement specialist AV cabling or structured cabling (UTP, fibre) is important and must be made with due regard to cable lengths, specific equipment requirements, procurement methodology, installation sequencing and support of future upgrades. Cabling infrastructure should support digital video formats.

• **Structural Loads:** Remote facility partition walls should be designed with regard to front wall equipment (displays, cameras and loudspeakers) as well as other wall mounted furniture such as sound absorbing wall panels.

d. **NETWORK INFRASTRUCTURE**
The network design must consider the following:

• **Facilities:** The wide availability of options for a basic point to point videoconferencing codec (or even two parallel codecs, as currently required by some jurisdictions) mean that bandwidth requirements for each remote facility can vary considerably. Options are available to extend the video resolution from basic 720p up to 1080p. Other relevant extensions may include the ability to conference multiple locations simultaneously (thus a four remote site conference at 1Mb per site will require a minimum of 4Mb into the codec). Network topologies supporting this capability include utilising an internal bridge and hosting multiparty conferences in the cloud. The appropriate remote facility solution will depend on factors such as cost, security and size of conferences.

Legacy systems utilise ISDN as the network. Rather than provide separate network access via ISDN to each individual remote facility codec, consideration should be given to providing a centrally located Gateway. The Gateway can be implemented as a standalone device.

• **Software Clients and BYOD:** Currently, many vendors offer software clients that allow smartphones, tablets and portable computers to participate in a conference (Bring Your Own Device, or BYOD). Whilst standard network security practices can provide for staff connectivity, there are potential issues over external client access that will need to be carefully considered.

• **Management and Network Control:** Management and network control is essential for supervision and fault finding on the videoconferencing network. The network control is important for bandwidth management and user authentication, as well as implementing a unified dial plan. It also provides managers with the ability to monitor network and system performance and utilisation.

• **Firewall Traversal:** Due to the nature of remote witness conferencing, the courts network will need to be provisioned to allow remote access to the network. This is achieved through Firewall Traversal. Each of the major videoconferencing vendors has solutions that will allow users from outside the network to call directly to systems on the internal network. Care is required to ensure appropriate security policies are in place.

• **The Future:** Videoconferencing standards and capabilities will continue to evolve. The change to IPV6 will mandate different dial practices, such as URI dialling. Current technologies such as H.323 and SIP will continue to evolve, and
newer video scaling technologies, such as H.264 SVC will provide alternatives to the mainstream videoconferencing technologies. Considerable care must be exercised when evaluating different technologies to ensure that systems being implemented are FULLY compatible with both internal and client systems.

e. REMOTE SPACE DESIGN
  • Room Width: The width of the room should be sufficient to allow the remote participant to allow comfortable movement around the chair and desk. We recommend a minimum of 3.5m total room width. Testing should be done with the chosen technologies to ensure that the width of the room allows for the comfortable distance of the remote participant away from the videolink technology, as well as allowing the placement of a chair nearby, and off-screen, for a remote court officer or support person. If someone is sitting off the side, there needs to be adequate space to allow for them to be off-screen (although still visible to the presiding judicial officer via their overview of the room).
  • Room Depth: The depth of the room should be sufficient to allow enough space for the remote participant to be seated away from the videolink equipment in order to allow transmission of the upper torso, gesticulation etc. Ideally the remote participant would have a piece of furniture (a desk or a witness box-like arrangement) in between them and the videolink equipment (or future remote participation technology). We recommend a minimum room depth of 3.5m (allowing a modest 0.3m for the equipment at one end, 1.5m between the surface of the screen and the eyes of the participant, and a further 1m for the participant and 1.2m between the participant’s chair and the back of the room behind them). More immersive systems such as DVE’s system require more depth for the equipment (up to 1m) and a longer distance (optimum 2.5m between the participant’s eyes and the surface of the image from the courtroom). See figure B3 on following page.
  • Room Volume: The volume of the room is important, particularly regarding the floor to ceiling height. Where possible, particularly for smaller sized rooms in width or depth, the ceiling height of the remote space should be, at least, slightly higher than the conventional 2.7m of many interiors. For some remote participants, more so than others, it may be important to evoke the out-of-the-everyday proportions of the civic space of the courtroom so as not to create conflicting nonverbal environmental cues.
  • Furniture and Loose Fittings: The room must accommodate, at minimum, the videolink equipment (preferably integrated into the room walls/ceiling and/or joinery unit). The furniture for the remote participant should be separate from the technology and should include at minimum two comfortable, height-adjustable and non-swiveling chairs; a table with a modesty panel to the front, that is deep enough for notes and evidence and wide enough to comfortably accommodate a document camera or laptop to one side. A movable table (preferably with a modesty panel in front) that sits between the remote participant and the screen will allow them to adjust the distance they are from the camera to be comfortable for their needs, and allows a sense of separation from the technology itself. The table should be deep enough for the placement...
of evidence (such as a A4 ring-binder folder).

• **Ambience**: The ambience of the remote room should be designed to convey respect for the remote participant and for the proceedings. Materials, finishes and designs that are congruent with the courtroom to which the room is linked are ideal, although an exact match will rarely be possible. Finishes that have low gloss surface treatments are desirable to assist in reducing glare. For some remote participants, for example, child witnesses and victims of sexual assault, it is also be important to soften the design of the space that is in the visual cone of the seated remote participant. This can be achieved through features that are more welcoming or conducive to promoting a greater sense of well-being, for example, a painting or a pot-plant.

• **Artificial Lighting**: The remote facility should provide a lighting scheme that supports effective visual communication in an environment that is visually comfortable and free from distraction. Videoconferencing demands that the lighting system design ensures cameras can capture the subtlety of facial features or expressions that are
so important in creating naturalness of communication between remote participants. Lighting may also serve to create the desired ambience in the room or to demarcate the threshold between waiting areas and the “court”.

Whether lighting for videoconferencing purposes is incorporated into the base room lighting scheme or designed as separate dedicated supplementary lighting circuits, the luminaires must be carefully selected, positioned and orientated to ensure each participant’s face and torso are optimally lit, free from shadowing and discolouration. In addition to achieving minimum illuminance levels on room finishes and the participant, luminaires should be positioned to create modelling or three-dimensionality across the face. Heavy shadowing (particularly around the eyes) caused from overhead light sources must be avoided.

The adjacent design criteria and guidance provides a starting point for the planning of video conference lighting for new or refurbished remote facilities. The services of a qualified lighting designer should be sought to interpret the

**DESIGN CRITERIA FOR LIGHTING SUGGESTED BY ICE DESIGN**

**Light levels**
Vertical Illuminance: minimum 300 lux (at head height towards camera; to be increased if natural daylight is not properly controlled).

**Frontal fixture positions**: 35° to 45° elevation above the participant 45° to the left/right of participant.

**Back Light fixture**: 60° to 75° behind the subject’s head (see figure opposite).

**Colour Temperature**
Use >5600K for rooms with controlled daylight. Must be consistent across all fittings.

Consider varying frontal fittings with different intensities to create a key & fill effect across the face to enhance modelling. By introducing the backlight a ‘halo’ effect is created which helps create depth and contrast of the participant from the background. Circuits should be dimmable to assist in final optimisation.

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appendix b: guidelines for the design and construction of remote court facilities and videolinked courtrooms
design criteria according to the specific demands of each project.

- **Background plane - colour / texture / material**: The backdrop of the remote participant (see ‘what the courtroom sees’ in Figure B4) should be chosen to best depict details of face of all skin tones (facial features of darker skin tones can be particularly problematic in this regard, and certain shades of pale blue are considered better than other tones for achieving this kind of facial definition. Further experimentation with colour, texture and patterning may be required once videolink is operational to achieve optimum background to accommodate a broad range of skin tones (from darkest to lightest).

- **Integration**: Where possible, the equipment should be integrated with the built environment (in the wall, or in purpose-built cabinetry that reflects the design of the surrounding space). Movable trolleys should be avoided. Cabling should be hidden.

- **Acoustics**: The remote facility should be designed to support effortless listening conditions and the electroacoustic capture and reproduction of natural sounding, highly intelligible speech. The environment must be free from distraction caused by extraneous sound sources and internal ambient noise levels.

Sound insulation of the room envelope (partitions, doors, ceilings and junctions) must be rated to achieve high privacy or confidentiality. The required ratings for the constructions will be dependent on the ambient noise levels in adjacent potential eavesdropper locations.

The room acoustic objectives are to achieve a high level of speech intelligibility and to preserve the natural qualities of a speaker’s amplified voice. Various treatments should be applied or integrated into wall, floor and ceiling finishes to control early sound reflections and the reverberation time\(^1\) in the space. The rear wall behind the participant should always be acoustically absorptive – as this wall forms the backdrop.

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\(^1\) **Reverberation Time (RT)** – a key design parameter used by acoustic engineers, this represents the time taken for a sound in a room to decay by 60dB after the sound source is turned off.
DESIGN CRITERIA FOR ACOUSTICS
SUGGESTED BY ICE DESIGN

Room Acoustics
Reverberation Time
0.3 to 0.5 seconds across all frequencies (dependent on room size; a small rise at low frequencies is usually acceptable: < 25% increase at 250Hz octave band)
The use of articulated and/or angular surfaces and structures in the room is encouraged as this will provide beneficial acoustic diffusion in the space.
Carpeted floor finishes are recommended. Consider acoustically absorptive ceilings (ensuring sound insulation to adjacent spaces is not compromised). Deep porous sound absorption (fabric covered acoustic wall panels) should be applied to the rear wall and on one of any pair of parallel and opposing walls (to avoid flutter echoes).

Building Services Noise Levels
Satisfactory internal design sound level for air conditioning: <NR30 or 35dBA.
Air conditioning systems should be ducted (from remote mechanical plant) and allow for attenuators to control low frequency noise from fans.

Sound Insulation
External Noise Control
Noise ingress from occupational noise in the building or external noise source (eg road traffic):
\[ L_{eq} < 30dBA \] (internal sources)
\[ L_{10} < 35dBA \] (road traffic).

Sound Level Difference
Minimum level difference to achieve high privacy between adjacent spaces:
\[ D_{w50} - \text{Remote Witness Room to corridor*} \]
\[ D_{w55} - \text{Remote Room to Remote Room} \]
\[ (* \text{assumes corridor with ambient noise level of 40dBA).} \]

For planning purposes, an overall partition width of 150mm should be reserved to accommodate staggered stud partition configurations or lined masonry constructions of suitable acoustic ratings. 50mm thick solid core doors complete with acoustic doors seals to achieve a minimum acoustic rating of \( R_{40} \) should be selected. Glazing in doors and partitions should be avoided or limited to slim viewing panels only.

Appendix B: Guidelines for the Design and Construction of Remote Court Facilities and Videolinked Courtrooms

Natural light and views: The remote space should have access to natural light and views of nature (or the urban landscape beyond) that are visible to the remote participant (remote room), particularly if the space is small. Any windows or false windows need a variety of different blind and opacity options in order to maximise the ability to control for glare without having to sacrifice the ability to look outside or gain access to natural light altogether. Ideally, external windows should be south facing (indirect light for the southern hemisphere). The daylight condi-

Registers should be located away from potential ceiling mounted microphone positions.

Refer to side panel for technical design parameters. The design criteria and guidance adjacent provides a starting point for the planning of new or refurbished remote facilities. The services of a qualified acoustic engineer should be sought to interpret the design criteria according to the specific demands of each project.
tions should be designed in conjunction with the electric lighting scheme using the services of a qualified lighting engineer to optimise comfort, diminish glare on the screen and avoid direct sunlight falling onto participants or room surfaces within the field of view of the camera.

**Waiting area:** The remote space should ideally be connected to a comfortable waiting area with access to natural light and comfortable seating and (secure where relevant) access to amenities such as bathrooms, tea bench (at minimum access to drinking water), and outdoor (perhaps smoking) area. The needs of remote participants waiting for their court appearance will vary to some extent depending on their category of participation and their role (remote defendant, witness, vulnerable witness, expert witness). All remote participants should have access to a waiting area that includes appropriate amenities. In the case of child and other vulnerable witness areas, the waiting area will need to be secure, with a separate, secure entrance. Access to other amenities, such as food preparation areas and children’s play areas should be provided for child witnesses, and family members accompanying them. An outdoor area for smokers should be available. Waiting areas themselves should have comfortable seating with some access to views and natural light.

**Articulating the threshold:** the symbolism of the threshold, and how that is crossed, needs careful consideration and, potentially, exaggeration. Architects need to consider how the ritual of the journey to court, and the crossing of out-of-court to in-court might be achieved in a new way in the remote space. (For some remote participants, this might be achieved through new forms of immersive virtual-reality technologies; for others, it may be more appropriate to achieve this with architectural cues). See Figure B5.

![Figure B5: Strategies for articulating the threshold. (© Emma Rowden).](image-url)
2. Minimum standards for courtrooms that can host a videolinked connection

Our research revealed a wide variation in the supporting infrastructure for videolinks in courtrooms, both in terms of capacity and configuration. While variations in individual courtroom design across different jurisdictions will obviously influence some aspects of the configuration of the technology, the following section sets some performative standards.

The overriding goal of the in-court technology is to support effortless communication, both in aural and visual domains, so court occupants and remote participants are free to concentrate on the subject matter rather than on discerning the spoken word and visual communication of the other party. It is particularly important to note that an absence of complaints from an existing facility does not necessarily imply that there are no difficulties with speech intelligibility or visual issues.

a. AUDIO SYSTEM
• **Loudspeaker System**: The courtroom loudspeaker system must primarily provide reinforcement of the voices of judges, counsel and witness plus the audio from a video conference or teleconference to all parties within the courtroom. In addition to these the system will also provide for playback of the audio from the court recording and possibly from electronic evidence. The most appropriate selection and configuration of loudspeakers will vary considerably between courtrooms, depending on their size, shape, layout, room acoustic performance (or lack of) and the general architectural intent. Practical guidance is therefore beyond the scope of this particular document; the services of a professional acoustician should be sought to establish appropriate design criteria and generate designs according to the specific demands of each project.

The performance of the audio and loudspeaker system will ultimately be judged on the degree of intelligibility delivered, its sound quality and the ease of use of the system. By applying a holistic approach to the design of the courtroom, a correctly designed courtroom acoustic together with a carefully engineered loudspeaker system will provide five key benefits, a:

- high degree of speech intelligibility;
- high degree of naturalness in the tonality of speech to be delivered to all listeners;
- high degree of amplification before feedback;
- good matching of visual and aural cues for talkers (source localisation); and,
- high degree of acoustic comfort and effortless listening conditions.

With specific reference to remote witness videolinks, a supplementary loudspeaker should be placed as close as possible to the video display in order to provide an aural cue (or source localisation) of the remote witness’s voice back to their image, resulting in a more natural communication experience for courtroom participants. This loudspeaker would operate in conjunction with the larger courtroom speech reinforcement system.
• **Microphones:** In general, microphones should be placed as close to the speaking position of each participant as possible (and away from noise sources such as air conditioning, fan driven AV equipment etc) to maximise the ratio of useful direct speech to detrimental room reverberance and background noise. Microphones should be discrete to ensure the technology does not present an unnecessary visual distraction or otherwise inhibit participants behaving in a natural manner when communicating in the courtroom or over a videolink.

Two generic types of microphone are commonly encountered in a courtroom:

*Gooseneck microphone:* A desk-mounted gooseneck microphone provides the most robust pickup characteristics if positioned correctly in front of each potential speaking position. The selected pickup pattern and mounting position need to be carefully reviewed particularly if speaking positions may vary during proceedings (e.g. counsel re-orientating or wandering from the lectern position to address the jury, face a remote participant during a videolink or refer to notes). The exact position of its mounting position should allow sufficient space for the positioning of books and papers between the speaker and the microphone whilst minimising noise disturbance from paper documents and keyboards. The microphone mount must provide good vibration isolation to minimise the transfer of ‘bumps’ from the desk into the microphone.

*Low profile boundary microphone:* The use of low profile boundary microphones on top of the table is generally discouraged as they are particularly sensitive to bumps to the desk and noise generated by documents being passed over the table surface. Furthermore, due to their low profile, there is a tendency for papers to be placed over microphones rendering them ineffective. Both noise sources issues can cause significant interference to transmitted speech signals without the remote participant even being aware.

In courtrooms, overhead microphones are generally inappropriate as the relatively large distances to speaker positions limit the achievable gain in the loudspeaker system before the onset of acoustic feedback.

• **Audio Signal Processing:** Every courtroom audio system must incorporate a dedicated audio digital signal processor (DSP) to enable full equalisation and alignment of each audio input and output chain in the remote facility. Effective, independent and adaptive DSP based acoustic echo cancellation (AEC) shall be employed on each and every microphone input to reduce echo and feedback during video and teleconferenced hearings. AEC processing must be installed in both court and remote sites to reduce echo back into respective locations. The microphone gating (or automatic selection of the microphone being spoken into) is a vital component in achieving clear reliable transmission of speech.

• **Transcript and Recording Systems:** It should be anticipated that all courtroom telephone and videoconferences will need to be recorded for transcription purposes. Transcription recordings may be a single, two, four, eight or more channel configuration per courtroom, allowing confer-
ence audio to be provided with a dedicated channel.

Generally, the audio system design for sound reinforcement will be different from that required for court transcript. As the transcription staff do not have the benefit of video confidence monitoring it is normal to ensure there is an active audio feed at all times (this is not normal practice within the sound reinforcement system). Signal processing, such as limiting and compression needs to be designed for the recording system. Signal levels from all local and remote sources need to be balanced prior to mixing to ensure that one sound source does not override another.

c. VIDEO SYSTEM
The in-court video system must readily support the distribution of electronic evidence from sources located in the courtroom (e.g. prosecution laptop) or a remote site (e.g. expert witness) as well as remote participant camera images to one or more displays throughout the courtroom. Apart from the procedural variances between jurisdictions, the physical layout of the courtroom and the demands of each hearing type require the primary function, location and size of each display to be carefully considered with respect to viewing distances and off-axis angles when more than one person is expected to view it. Within the broader context of remote videolinks, it is important to distinguish different requirements for a display that is primarily for presenting a remote participant via videoconference from one intended for the display of electronic evidence. Based on current best practice, the video system infrastructure should be designed to support resolutions of up to 1080 lines. High definition cameras of at least 720 lines should be chosen.

• Small Format Displays: For scrutiny of electronic evidence sources, individual displays should be provided for the bench, bar, witness and dock, as a minimum. These displays should not be used to display the main camera image of a remote participant during videolinks. (The bench display may be used to view a wide angle shot of the remote witness room).

• Videoconferencing Display for Remote Participant: Ideally one dedicated large format screen would be provided for each courtroom for the purposes of presenting each type of remote participant (ie. one dedicated for remote witness, remote defendant, the remote judge, etc). The display would be sized such that the remote participant is presented at the same size (‘life size’) as if appearing in person. For remote witness videolinks, the display should be located next to or behind the witness box, to maintain familiar sightlines for the court. The single display ensures those engaged in the videolink look towards the correct display and its co-located camera(s).

Each videoconference display should be accompanied by a dedicated, localised loudspeaker for remote audio reproduction (refer to Audio System above).

Practical and financial pressures usually dictate that the videoconferencing display will also be used to present electronic evidence to courtroom, often as the main display for the jury and public. However, good viewing conditions for detailed electronic evidence (where the maximum viewing distance should be no more than
High-definition, professional grade screens supporting multiple signal formats up to 1080p resolutions are required to achieve a sufficiently detailed image of far end participants to achieve a convincing ‘telepresence’ experience for all parties involved. A low reflectivity finish is preferred to reduce distracting reflections from courtroom lighting.

• **Additional Displays:** For multiple witnesses (e.g. two remote experts giving evidence concurrently) an additional screen might be required. This should be arranged in preference to the size of the participant being reduced to allow for a split screen (see ‘life size proportions on p120).

• **Camera:** Cameras must always be co-located with the display that corresponds to the image of the far end participant in the courtroom. The camera must be placed as close to the location of the eyes of the remote participant onscreen as possible in order to replicate eye-contact. Practical limitations dictate that the camera is usually best positioned immediately below the display.

• **Preset Camera Positions:** should be created to provide a series of orientation shots to accompany an introduction to the court for the remote participant conducted by the judge. These should be tailored for the type of remote participant, for example:

1. **REMOTE LAY WITNESS / REMOTE DEFENDANT:** (in order) a ‘close up’ of the judge, a wide-angle camera shot of the whole courtroom, a wide-angle view of the jury (in a jury case), a wide-angle view of the public gallery, finishing on ‘close up’ view of the judge and lawyers.

2. **REMOTE EXPERT WITNESS:** (in order) a ‘close up’ of the judge, a wide-angle camera shot of the whole courtroom, a wide-angle view of the public gallery, finishing on a wide-angle view of the jury (in a jury case), and a closer view of the lawyers.

3. **REMOTE VULNERABLE / CHILD WITNESS:** a ‘close up’ of the judge and lawyers only (unless directed otherwise by the court).

4. **REMOTE JUDGE:** the judge should at all times, whether they are based in the courtroom or in the remote space have full view of the other end of the link and the capacity to access a close up view of any part of the courtroom, including the lawyers, the public gallery, the jury, the dock and the witness stand (either by way of an overview shot in a CCTV arrangement, or by setting up a secondary camera in the remote space when videoconferencing).

5. **REMOTE PUBLIC GALLERY:** members of the public participating remotely should have access to a full overview view of the courtroom including the lawyers, the public gallery, the jury, the dock and the witness stand, and also a view of any other courtroom participant appearing remotely. This might be provided through...
a number of multiple views, rather than one single image, depending on the configuration of the courtroom and the technical capacity of the equipment.

**Life-size Proportions:** cameras and displays should be placed to pick up any speaker in a front-on direction, rather than capturing their image at an oblique angle or side-on. The speaker should appear the same size (‘life size’) as they would if they were appearing in person.

**Judge Overview Display:** The judge will require two views - one of the overall view of the remote participant, and the front-on view of the remote participant (which is also the main image fed to the rest of the courtroom). There needs to be a consistent policy for the corresponding courtroom video system designs to match the remote participant audio-visual feeds.

c. **INFRASTRUCTURE**
- **Cabling:** As a minimum, consideration should be given to providing cabled services, in accordance with relevant jurisdictions’ design guidance. Cabling infrastructure should support digital video formats.

- **Structural Loads:** Walls should be designed with regard to mounting equipment (displays, cameras and loudspeakers) as well as other wall mounted furniture such as sound absorbing wall panels.

- **Network Bandwidth:** This document does not extend to specifications for networks. However, as a general principle, networks provided for videoconferencing purposes should be designed to support the highest bandwidth capability of the videoconferencing codec, even if final connection speeds are initially limited by WAN or internet bandwidths. Note that some jurisdictions already require the provision of two parallel codecs to achieve three or more video feeds in one direction.

d. **COURTROOM DESIGN**
- **Integration and Ambience:** The coordination and integration of the videolink equipment with the courtroom architecture should be carefully considered as the size and location of the equipment can be quite specific and may influence the room layout and design. Cabling should be hidden. Where the courtroom might be used for a number of different types of proceedings, and with different types of remote participants, more flexible arrangements should be encouraged where the image and sound of the remote participant can ideally be placed where all can see them, and from where they would normally appear (for instance, behind the judicial bench and in front of the coat of arms for the remote judge). Regardless, the manner in which the videolink equipment is presented to courtroom participants should reflect the dignity of proceedings and not diminish the respectful ambience of the courtroom environment.

- **Artificial Lighting:** The courtroom lighting design in a courtroom has several functions to fulfil. In addition to achieving the functional requirements for a well lit working plane on which to read documents, the lighting scheme must support effective visual communication between occupants in an environment that is visually comfortable and free from distraction. Lighting
will also serve to create a desired ambience in the room or to enhance architectural features. However videoconferencing perhaps places the most onerous demands on the lighting system to ensure cameras are able to capture the subtle facial features that are so important in creating naturalness of communication between remote participants.

Whether lighting for videoconferencing purposes is incorporated into the base room lighting scheme or designed as separate dedicated supplementary lighting circuits, the luminaires must be carefully selected, positioned and orientated to ensure that the face and torso of each courtroom participant (judge/magistrate, counsel, witness) is optimally lit, free from shadowing and discolouration. In addition to achieving minimum illuminance levels on room finishes and the participant, luminaires should be positioned to create modelling or three-dimensionality across the face. Heavy shadowing (particularly around the eyes) caused from overhead light sources must be avoided.

- **Acoustics:** The courtroom must be designed to support effortless listening conditions and the reliable capture and reproduction of natural sounding, highly intelligible speech. Irrespective of the quality or extent of in-court sound amplification, the room acoustic design must support the clear intelligible exchange of speech between judge, counsel and witness plus any remote participants appearing via videoconference or teleconference. The environment must also be free from distraction caused by extraneous sound sources and internal ambient noise levels.

The most appropriate selection and configuration of room constructions and finishes will vary considerably between courtrooms, depending on their size, shape, layout, quality of electroacoustics system and the general architectural intent for the room. Practical guidance is therefore beyond the scope of this particular document; the services of a professional acoustician should be sought to establish appropriate design criteria and generate designs according to the specific demands of each project.

Sound insulation of the room envelope (partitions, doors, ceilings and junctions) must be rated to achieve high privacy and protection from intrusive noise from adjacent spaces. It is important to remain mindful that sometimes courtroom doors will remain open when court is sitting; road traffic noise ingress and general public occupational noise control immediately outside the court space may also need to be appropriately controlled.

**Room Acoustic Treatment:** The room acoustic objectives are to achieve a high level of speech intelligibility and to preserve the natural qualities of a speaker’s voice, particularly when amplified during a videolink. These objectives are achieved by selecting the correct combination and quantity of sound absorptive and reflective room finishes to achieve the correct reverberation time and appropriately locating the treatments to reduce the strength of detrimental late sound reflections that would potentially mask the beneficial early sound reflections.

Building services noise must also be appropriately controlled to achieve comfortable listening
conditions for participants and reliable, noise-free pick-up of speech by the microphone.

- **Natural Light and Views:** The courtroom should have access to natural light and views of nature (or the urban landscape beyond) that are visible to courtroom participants, particularly if the space is small proportionate to the number of people in the courtroom. Any windows or false windows need a variety of different blind and opacity options in order to maximise the ability to control glare on the video screens without having to sacrifice the ability to look outside or gain access to natural light altogether. Access and direction of natural lighting should be designed in conjunction with the electric lighting scheme using the services of a qualified lighting engineer to optimise comfort and diminish glare on the screen.

- **Location within the courthouse:** such spaces should have access for lawyers from the public area via a secure entrance, to ensure lawyer-client privacy and protect the equipment. In the short-term, to address security concerns by lawyers, this facility should have a dedicated CODEC. Prisoners should be routinely moved to a similar facility at the prison that is made available for this purpose; with the prisoner advised at the conclusion of each link that they require an after-court briefing from their lawyer. While it may be logistically difficult for lawyers to book the courthouse facility for consultations, the facility should be positioned so that it is possible for them to access the facility on exiting the court and see if their client wishes to speak with them on the link.

As a general practice, each court that is regularly used for bail or remand hearings should have at least one such space dedicated to use by lawyers. Advances in mobile computing technologies may, in the future, make it possible for lawyers to conduct such interviews using other tools, such as tablets or mobile phones. However, prisoners’ access to those connections from correctional facilities will still need to be controlled.

Such additional remote facilities in courthouses, police stations and prisons that are used to link to court on an increasingly regular basis should be designed in accordance with the guidance as outlined in this appendix.

e. **ADDITION OF MULTIPURPOSE REMOTE SPACE FOR FOLLOW-UP VIDEOLINKS**

During our research, a need was identified for a videoconferencing room (which could double as a secure interview room) within the courthouse to enable a space for lawyers to access their clients who have appeared remotely in order to debrief directly after a case, and to take instructions prior to court - a process that normally happens when the person appears in person. For example, we found in one prison that it was the non-legal trained prison officer who was left to do the immediate follow-up with the defendant regarding what happened in their case (an onerous task that they are not directly qualified to perform).
appendix c:
guidelines for selecting multipurpose remote spaces for court appearances

This guide is intended to assist in the selection of appropriate remote spaces that are not in the direct control of the Department.

A Central Registry of Ministry/Department approved remote spaces that are linked to court on an occasional basis should be established and maintained (see recommendations made in “Prior” section 5.1.1 of this document).

Remote spaces should be selected to meet the requirements described in Appendix B (for a dedicated space), while providing for any flexibility necessary to accommodate other complimentary uses other than videoconferencing to a court. For example, in a police forensics facility, a videoconference suite might also be used for meetings, videoconferences or other activities. However, it is vitally important that the room can be returned to the optimum layout and arrangement for a remote court appearance, with no extraneous or distracting features.

a. GENERAL
Staff at the remote site should be trained to ensure that the space is always reconfigured after alternative uses to the optimum arrangement determined for videoconferencing to a court. This may be established through a checklist to ensure that the configuration of the space is optimal to the videolinked court encounter.

Portable systems (ie. equipment on a trolley) are generally discouraged as they risk introducing several changes to the room environment set-up and interaction that could jeopardise performative standards. The regular movement and disconnection of the equipment creates a higher risk of damage, and makes conditions less likely to remain consistent across videolink sessions. If a portable system is used, there should be clear guidelines or means to repeat the set-up to create reproducible conditions once optimum conditions have been determined. Staff overseeing the facility should be made responsible to ensure these performative standards are met.

b. SECURITY
All mainstream video conferencing systems inherently incorporate encryption to ensure communication is confidential between conference sites even when transmitted across internet and
other public networks. Therefore, there are no specific network security provisions required to maintain a secure link between an external multipurpose remote space and the courtroom. However, network security in the corporate environment is critical to protect other assets that are vulnerable to attack through firewalls. It is necessary to ensure appropriate video firewall traversal products are incorporated into network design.

b. AUDIO SYSTEM
As per Appendix B.

Additional notes: Ideally the space would be quiet, with low ambient noise levels, good or moderate acoustic control and free from intrusive noise from external environment or internal occupied areas.

c. VIDEO SYSTEM
As per Appendix B.

d. PREFERRED REMOTE SPACE ATTRIBUTES
- **Room Width:** The width of the room should be sufficient to allow the remote participant to move comfortably around the chair and desk. Testing should be done with the chosen technologies to ensure that the width of the room allows for the comfortable distance of the remote participant away from the videolink technology, as well as allowing the placement of a chair nearby, and off-screen, for a support person. If someone is sitting off the side, there needs to be adequate room to allow them to be off-screen (although still visible to the presiding judicial officer).

- **Room Depth:** Ensure that the depth of the chosen room allows for the comfortable distance of the remote participant away from the videoconferencing equipment (depending on position and focal length of the camera, this could equate to approximately 1.5m – 2.5m between front of screen to front of remote participant’s face). Ideally the remote participant would have a separate piece of furniture (such as a desk, preferably with a modesty panel at the front) in between them and the videolink equipment.

- **Furniture and Loose Fittings:** The furniture provided for the remote participant should ideally be separate from the technology and should include at minimum two comfortable (preferably height-adjustable and non-swivelling) chairs; a table (ideally with a modesty panel to the front), that is deep enough for notes and evidence and wide enough to comfortably accommodate a document camera or laptop to one side, if required.

- **Amblence:** The ambience of the remote room should convey respect for the remote participant and for the proceedings, through its choice of fixtures, fittings, furnishings and textures. Otherwise, a space that is ‘neutral’, and free of distractions, is to be preferred.

- **Artificial Lighting:** Ideally lighting should provide an even wash of light across the face to avoid shadowing over the face, particularly around the eyes. Additional lighting may need to be introduced to the room (e.g. lamps that throw light onto the participant’s face without causing too much glare) to create optimum lighting for the camera, and should be positioned to
avoid glare onscreen or visual discomfort for the remote participant.

• **Background plane colour/texture/material:** The backdrop to the remote participant (‘what the courtroom sees’ in Figure B4, p114) may need to be adjusted depending on the previous use of the room. It should be of a colour and texture to best depict facial details in all skin tones (facial features of darker skin tones can be particularly problematic in this regard, and certain shades of pale blue are considered better than other colour hues for achieving this kind of facial definition). Ideally a backdrop that is congruent with the design of the courtroom to which the remote space is to be linked will be referred.

For this purpose, courts might provide a moveable backdrop in such a design to those multipurpose spaces that are regularly used on a more regular basis to link to courts. Careful attention should be paid by the remote participant on arrival, and the image of the participant should be checked by way of a self-view (see below). At minimum the backdrop to the participant should be free of distractions.

• **Integration:** Where possible, the equipment should be integrated with the built environment (in the wall, or in purpose-built cabinetry that reflects the design of the surrounding space). Movable trolleys should be avoided. Cabling should be hidden.

• **Natural light and views:** The remote space and adjacent waiting areas should ideally have access to natural light and views of nature (or the urban landscape beyond) that are visible to the remote participant, particularly if the space is small. Try and select spaces with windows that have some capacity to vary light intensity - such as blinds - to maximise the ability to control for glare without having to sacrifice the ability to look outside or gain access to natural light altogether.

• **Waiting Spaces:** the remote space should ideally be connected to a comfortable waiting area with access to natural light and comfortable seating. Easy access to drinking water and a toilet on site should be mandatory. Remote participants should be oriented to these facilities when they arrive prior to their appearance. In the case of child and other vulnerable witness areas, the waiting area will need to be secure, with a separate, secure entrance provided. An outdoor area for smokers could be made available. Waiting areas should have comfortable seating with some access to views and natural light.
appendix d: suggested proforma for collecting data on videolink use

<table>
<thead>
<tr>
<th>Date</th>
<th>Method</th>
<th>Case Type</th>
<th>Proceeding:</th>
<th>Duration</th>
<th>Remote site</th>
<th>Remote participant</th>
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<td>☐ Prison</td>
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<td>☐ Criminal</td>
<td>☐ Bail application</td>
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<td>☐ Witness</td>
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<tr>
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<td>☐ Computer e.g. Skype</td>
<td>☐ Pre-trial</td>
<td>☐ Forensic facility</td>
<td>☐ Judge/Magistrate</td>
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<td>☐ Lawyer</td>
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<tr>
<td></td>
<td></td>
<td>conference etc.</td>
<td>☐ Other</td>
<td>☐ Interpreter</td>
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<td>☐ Other . . .</td>
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</tbody>
</table>

Location where the link was initiated **:

Proceeding:
- Remand
- Bail application
- Committal
- Pre-trial hearing/status conference etc.
- Hearing/trial
- Sentence
- Appeal
- Other . . .

Duration
- Remote site
  - Prison
  - Child/vulnerable witness facility
  - Forensic facility
  - Court
  - Other . . .

Name of Remote Site **:

Remote participant
- Defendant
- Witness
- Judge/Magistrate
- Lawyer
- Interpreter
- Other . . .

Our research indicates that courts could benefit from more consistent standards of record-keeping about the use of videolink technologies (videoconferencing, CCTV and any other forms of audio or audio-visual communications) to better inform how to best allocate resources, to pinpoint areas where the use of these technologies might be increased, or more effectively deployed and to enable comparisons about the use of audio-visual links generally both within and between jurisdictions.

The following proforma is provided as a starting point. We suggest adapting this proforma to the particular needs of the court.

** (Note: keep naming conventions consistent for all sites. For example, just putting “Ararat” may indicate Ararat Prison, or Ararat Courthouse, or a business centre in Ararat)