

Sir Zelman Cowen Centre, Victoria University
The Australian Institute of Judicial Administration Incorporated

Court Technology Conference

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Case Study eCourts on any budget

(A beginners guide to the construction of an eCourt ... some lessons learned by someone who has endured the process)

PROFILE

Anthony Elliott is a Senior Crown Prosecutor with the Office of the Director of Public Prosecutions in the Northern Territory. Admitted to practice in Western Australia in 1988 and in the Northern Territory in 2001, Anthony has spent most of his professional life as a Crown Prosecutor, with more days spent in court than out. Familiar with the electronic transcript system in Western Australia and some of the technological innovations introduced there, Anthony was enlisted as the Senior Crown Prosecutor to assist the Northern Territory DPP (Rex Wild QC) in prosecuting Bradley John Murdoch in relation to the disappearance of Peter Falconio. That has entailed setting up a document management system for an investigation brief running to 170,000 pages and playing a large role in the design of the specially equipped eCourt which has been constructed to handle the case.

INTRODUCTION

If you are anything like me, you will feel ill-equipped to deal with the establishment of an eCourt. That is certainly the way I felt, despite many years exposure to technology and its application in a courtroom setting. Using litigation support tools and aids to courtroom presentation is a far cry from the construction of an eCourt from scratch. Trust me; I have already learned that lesson.

Perhaps that is the reason why I have been invited to address this conference ... in order to share my experiences and give those thinking about embarking on this course a few pointers and tips.

Despite having a reputation within my own office (and the previous office in which I worked) of being technologically savvy, I found myself floundering from the very outset. I had a wish list of features as long as my arm, but did not know the first thing about constructing a court. I knew what I might like to put in the courtroom in terms of features, but soon realised that there were a whole series of areas about which I had not a clue.

Consequently, in the course of this presentation I am hoping to highlight as many different areas as I can to provide a bit of a check list of things you might need to think about.

I should point out from the outset that, as I approached the task of setting up the new eCourt in the Northern Territory, I did so from the perspective of an advocate.

I began by thinking about the technological aids which I could use in presenting a case. As you can imagine that particular bias very much governed the way that I thought.

WHERE TO LOOK FOR HELP

Before I get down to brass tacks, let me just point out the biggest difficulty which I had as I began my task: I simply did not know who to turn to turn for information. Despite many years involved in litigation, having contacts in the court system in Western Australia and the Northern Territory, having attended the first AIJA conference on Technology for Justice 1998; being a regular reader of technology magazines, and not averse to a bit of Web searching, it was still extremely difficult to identify sources of information.

My first instinct was to visit the [Courtroom 21](#) web page, thinking that I would be able to find a checklist of all the things that I would need to consider or include. I thought that there might be some floor plans available from which to get ideas. I thought that there might be a checklist of all the latest gadgets and technology that one might include in a new eCourt. I thought that there might be a list of suppliers of these things and that I would be able to click on some links to find out more. How disappointed I was!

Not only did the Courtroom 21 web page provide little assistance, but there seemed to be a real dearth of helpful materials on the Internet. I searched, and searched, and searched, and searched. There was lots of talk on the theory but no practical help. Some of the talk was simply marketing. Much of the talk reinforced some of the ideas which I already had, without telling me how to implement them.

Even when I found helpful advice about good ideas, such as the [Smart Technologies](#) range of products, that was still only a small part of the picture. What remained unsaid was how much this would cost and where you could find whatever it was in Australia.

A second port of call was the [AIJA web site](#) where I had recourse to papers from previous *Technology for Justice* conferences. Rummaging through those

sources also reinforced some of my initial ideas, but again, they were concerned more with the theory than setting things up in practice.

THE FIRST STEPS

Even though I am about to state the obvious, it might be useful to distil the process down to a few simple questions:

1. What would you like the system to do?
2. What equipment do you need to achieve that?
3. What basic equipment is required even before you get to the bells and whistles?
4. What courtroom furniture and fit out is required?
5. How much can I afford?

It is probably obvious the manner in which I set out those questions reveals my own bias. I automatically started my considerations by thinking about what I would like the system to do. The question of how much it would cost was a low priority for me. Perhaps that is why this topic is entitled “eCourts on any budget”.

I soon found that the Court Administrators will start at question 5 before working through questions 4, then 3, then 1 and finishing with 2.

The technology people will be told how much there is to spend, told what the system should do and then be asked to satisfy as many of those requirements according to the budget available.

It is useful to remember that the three different groups of people will approach the task of constructing an eCourt from these different directions.

Many of you will have read that the Northern Territory government provided a fairly healthy budget for the construction of our new eCourt. Healthy though

that budget was, it was still not enough to provide for every item on my wish list. That is because items 3 and 4 in my list can cost quite a bit. My impression is that the court constructed for the Snowtown case in South Australia was considerably better funded and our own. It is certainly a lot bigger! Then again, I have also heard that there have been a number of tribunals established on what might be termed comparatively “shoestring budgets” in comparison to the Northern Territory budget.

PRELIMINARY CONSIDERATIONS

Before dealing with the five questions I outlined previously, there is one more question which is fundamental to things: where is the court going to be constructed? Will it be, as it was in the Northern Territory, constructed within an empty shell already available within the existing court building? This was a luxury (and also a vice) for the Northern Territory. The Supreme Court building still has at least two empty shells which await fit out. This meant that there was already a room available, but also meant that we were restricted to using a particular room which as it turns out was small and proved to be less than the ideal size.

A related issue involves a consideration of what the purpose of the court will be. In the Northern Territory the eCourt was constructed in order to accommodate a large criminal trial which will be heard in the Supreme Court next year (and it was also used for the related committal proceedings).

It may be that there are substantial differences where the court is intended only for civil trials, Royal Commissions or similar inquiries.

As with South Australia, the Northern Territory eCourt has been constructed so as to accommodate a jury. There are very specific design considerations applicable to such a case. For example, as well as providing all jurors with display screens, the large plasma screens are situated so that they are easily seen by the jurors first and foremost.

GENERAL DESIGN ISSUES

The design of the courtroom itself is another vexing issue.

Obviously, every jurisdiction will have its own examples to follow. Those delegates who work in court administration should have ready access to plenty of examples. For those of us outside that circle, getting your hands on actual designs is extremely difficult.

It is not surprising that information on courtroom design is difficult to find. There are real security issues which surround courts. You don't want the world to know the details of the building layout as that is just inviting people, like prospective escapees and their helpers, to take advantage of that knowledge. I suspect that this was the reason why it was very difficult for me to lay my hands on plans from other jurisdictions. It seems to me that a forum established by those responsible for these decisions would assist in a cross-pollination of ideas about courtroom design across jurisdictions.

The next question is: are traditional designs appropriate for a modern eCourt, or are variations on the theme necessary to accommodate the technology involved.

My impression is that traditional criminal court layouts (with the accused at the back of the court) seem to have fallen out of favour with modern courtroom designers. Instead, the accused is often placed directly opposite the jury, at one side instead of at the back.

In the existing courtrooms in the Supreme Court of the Northern Territory, the witness box is also placed opposite the jury, meaning that it is directly adjacent to the dock. That might not cause problems in fraud cases, or burglaries, but it is a real difficulty in sexual assault cases or other cases where there is a vulnerable victim who might be uncomfortable being so close to the accused. The first draft of the eCourt layout followed that model. As

much as I, and others in the Office of the Director of Public Prosecutions objected to that design, we encountered some difficulty in persuading the bureaucrats of the importance of this design change. After much argument over the point witness box was eventually moved to a position near the jury on the opposite side of the room to the accused when the new Chief Justice weighed into the argument. Of course, having presided over the Snowtown case in South Australia, Chief Justice Martin was well placed to offer such advice. He also recommended using swivel chairs in the jury box, saying that it would make it easier for the jurors to move their focus depending on who was speaking.

An easily overlooked necessity, given the amount of electronics used in the Northern Territory eCourt, is the availability of an adjacent, or at least nearby, room to house it all. Whilst obvious to me now, that was not something which I had factored into my picture of what an eCourt might require.

Finally on this area of design, whilst I found little material dealing with the design of an eCourt, I did find an article on courtroom design generally by Don Hardenbergh, which is titled “Planning and Design Considerations for Trial Courtrooms” published in (1990) 14(4) State Court Journal 32. It appears that he has written a couple of books on the topic (neither of which I have examined), which are described on [Amazon.com](https://www.amazon.com).

FURNITURE AND FIT OUT

Another important issue which can substantially influence the outcome is whether or not there is already furniture and fittings within the courtroom.

In the Northern Territory example, the court was an empty shell, so all items such as judge’s bench, bar table, and jury box had to be constructed. The advantage of this is that, they could be constructed so as to accommodate the technology rather than trying to make the technology fit around existing fittings

and fixtures. There is plainly a cost in having to modify fittings and fixtures in order to accommodate the technology.

Other items, such as a false floor, or cable runs, are mentioned in the following section.

BASIC EQUIPMENT

There are a number of things which it you might consider as being fundamental to an eCourt:

1. Court control system
2. Lighting system;
3. Videoconferencing (may also be linked to a remote witness room);
4. Specialised audio system;
5. Soundproofing. Well constructed courtrooms have sound dampening treatments was poorly constructed courts echo like the Grand Canyon.
6. Document management and presentation software (such as Ringtail, Summation etc);
7. Server to operate that system, with related equipment and software:
 - (a) Document display system;
 - (b) Network infrastructure (switches, routers, Ethernet ports etc and cabling – may consider WAN as well as LAN)
 - (c) UPS;
 - (d) Bypass switch;
 - (e) Surge Diverter;
 - (f) In-court printer (to allow for printing of exhibits etc (if needed) and printing of hard copies of exhibit lists and the like). Ideally this will be a high speed colour printer.
 - (g) SQL Server licence (runtime)
 - (h) Other software (Windows 2000, Web stuff, CALs)
 - (i) BAS Server Management
8. Courtroom equipment racks

9. Scanner or document camera

Of course, once the court is set up, there is a need for protocols governing how things are run. Rather than re-inventing the wheel, I would simply provide as examples the following offerings:

[Guidelines for the use of Technology in Litigation in any Civil Matter \(2002\) 5 VR 107](#)

[NSW Practice Note 127 - Use of Technology in Civil Litigation](#)

NT Guidelines used in the Falconio Case committal

[Queensland eCourt](#) Web Page

[Practice Direction relating to document management](#)

[Form 19 Civil Procedure Rules](#)

[Sample Document Protocol](#)

[SA Practice Direction 52 – Guidelines for the use of technology](#)

[WA Guidelines](#) (these are not nearly so comprehensive as the NSW or Victorian versions)

[Technical guide for preparing court documents](#)

[Electronic documents index sample form](#)

[Electronic documents index sample form](#)

[Practice Directions generally](#)

[Federal Court](#)

[Practice Note 17. Guidelines for the use of information technology in litigation in any civil matter](#)

Last but not least, in order for all of this equipment to be useful, one cannot ignore the need for, and cost of, training.

SPECIAL FEATURES

Optional add-ins might include:

1. Annotation facility (witness, Judge, counsel);

2. Videoconferencing tweaks:
 - (a) Display of local documents to remote witness;
 - (b) Display of remote documents together with image of remote witness;
3. False floor for easy cable runs;
4. Facilities for media (including live visual and sound feed to a dedicated media room);
5. Specialised lighting to accommodate the special requirements of videoconferencing i.e. including adjustable settings;
6. Special switching for microphones and individual monitors (or groups of monitors) allowing them to be turned on or off as required;
7. Wireless network facility;
8. Facility to allow counsel to connect their computers to the display system;
9. Internet access;
10. Large plasma screens for display;
11. DVD / videotape playback facility
12. Web server
13. Transcription (whilst a small jurisdiction like the NT cannot justify it, larger jurisdictions may be able to employ real-time transcription)

SOME NOT SO OBVIOUS COSTS

1. Demolition costs
2. Carpet
3. Painting
4. Duress Alarms
5. Chairs – Judges, court staff, counsel, jury, public seating
6. Design / architectural fees
7. Project management fees
8. Software support and maintenance (depending on solution chosen)
9. Hardware support and renewal costs (replacement of servers)
10. LAN Infrastructure costs

MISCELLANEOUS ISSUES & DIFFICULTIES

I had considered setting up our own team to barcode, scan and catalogue the documents in the Falconio case. Ultimately, that was not the route which was followed and instead the documents were processed using a scanning bureau.

This paper reason not the appropriate place to indulge in a discussion of the trials and tribulations associated with document scanning and management. Knowing some of the problems which we encountered with our set of 170,000 pages, I just hate to think of how the HIH Royal Commission coped with the millions of documents which they had. [That is not meant as a reflection on Diskcovery, who did an excellent job. Despite their expertise, the management of a large volume of document really is a pain in the neck!]

Having said that this is not the place to discuss scanning issues, I would just like to mention that despite the utmost care, unless you manage to examine every document between scanning and hearing, you will find that some documents need special treatment insofar as the standard scan will not reveal the necessary detail for display in court.

Also, one cannot overlook compatibility issues. Whilst we only had one real instance of this, it proved to be a real bug-bear. It related to around 450 hours of audio recordings from a listening device which the police had saved to Sony mini discs. The proprietary format of the discs did not allow the digital files to be copied onto computer for secretarial transcription unless in the original files were removed from the mini disc. This was a real problem in terms of continuity of the exhibit and meant that the sound files had to be re-recorded in real-time rather than making digital copies. I mention this as an illustration of the inconvenience which can result if planners do not look at the overall picture. This specific problem relates to the evidence gathering phase, where the police gave no thought to the question of how transcripts would be prepared from the Sony mini discs. It is easy to see how similar compatibility

problems might arise in other areas, particularly if proprietary format is used for sound recording, or if systems can only accommodate particular types of audio-visual files (with no means of updating codecs)

There are two areas where we encountered technical problems when running the committal in the Falconio case.

1. Our funds did not extend far enough to implement the annotation system which I fancied. You might have inferred from something written earlier that this would have allowed annotation of an on-screen image by the witness, the judicial officer and by counsel at the bar table. Having used the SmartBoard system in the past, I have been used to the ease with which documents, images and plans can be annotated by counsel and witness at the same time.

I cannot tell you precisely what system is in place in Court 6, but I can tell you of the limitations of the system:

- (a) Annotation is only possible using the large plasma screen, effectively limiting its availability to the witness (although the court technician can point using a mouse, and make some basic annotations);
 - (b) Unlike the SmartBoard system, which runs a special software program which makes annotation very easy with relatively easy setup (the image involved is simply loaded into a Smart Notebook and it is ready to go), with the current system, the image has to be converted into bitmap image format and then loaded into a rudimentary editor (like MS Paint) before being displayed on the plasma screen. It is the annotated bitmap image which is then saved.
2. I had always understood that the videoconferencing system which was installed would allow the transmission of a duplex image (a view of the

court/counsel plus, if necessary, an image from the document set at the same time). Perhaps the court technician was not applying the right technique, but we could not get this to work. This was a problem as there were a large number of witnesses at the committal who gave evidence by video link from Broome, Western Australia. The nature of their testimony was such that they had to refer to their business records (many of which we had in Darwin) but we were absolutely unsuccessful in transmitting them in the way I have described. The best we could manage, as a result of an inventive approach from the court technician, was to display the image on the plasma screen and then focus the videoconferencing camera on the screen. Not very clear, but clear enough for the witness to be able to say that the image looked like the document which they had in front of them.

COSTING ESTIMATES

These estimates are based on figures which were bandied around at various stages in connection with the Northern Territory project. They are by no means either the high point, or the low point, of what might be paid in relation to particular aspects of construction. They are put forward so as to give you a guide of how much you might need to allow for.

Construction Work

Demolition	\$ 6,600.00
Raised Flooring	\$ 30,000.00
Electrical light and wall fittings	\$ 20,000.00

Joinery

Judges bench, Bar tables & Assoc. Bench	
Public barrier/shelving	
Witness stand, lectern, wall linings and acoustic panels	
Dwarf walls and part raised timber floor	\$200,000.00

Other requirements

Carpet	\$ 15,000.00
Painting	\$ 5,000.00
Duress Alarms	\$ 5,000.00
Chairs - Judges, Bar, Assoc etc	\$ 30,000.00

Program Delivery Fees \$100,000.00

IT Component

SQL Application Server hardware	\$ 40,000.00
Web Server hardware	\$ 20,000.00
LAN switch - 24 port fibre to Cat6 (for court 6)	\$ 10,000.00
Fibre Cabling from Court 6 to Server room	\$ 7,500.00
Case Management & Presentation System	\$ 50,000 to \$100,000.00
SQL Server licence (runtime) \$5,000 per processor	\$ 12,000.00
Other software (Windows 2000, Web, CALs)	\$ 25,000.00
Courtroom equipment racks	\$ 7,000.00
Server setup	\$ 9,000.00
WAN – Router port (2 servers) \$225 per server per month	\$ 6,000.00
BAS Server Management (2 servers) @ \$8,400per server	\$ 16,800.00
Case Management Support & Maintenance (per annum)	\$ 10,000.00
Ethernet ports (LAN infrastructure, 15 ports @ \$25 per port per month)	\$ 4,500.00

Electronic Component

Audio System	\$ 80,000.00
Video Conf codec, camera & mounts, 3 x ISDN only, PIP included	\$ 35,000.00
Electronic court room system – Rationalised; using internal DVD/CD player for evidence playback	\$ 35,000.00
Public Display - 50" Plasma with mount	\$ 14,000.00
2nd Display - 43" Plasma with mount	\$ 10,625.00
Desk Display, mounts, desk mount interfaces and cables	\$ 30,000.00
Control System - Rationalised	\$ 36,000.00
Hardware, UPS, Bypass switch, Surge Diverter, installation	\$ 12,000.00
Audio-visual Cabling	\$ 30,000.00
IT Cabling, Power Distribution, Racks, Cable Tray etc	\$ 55,000.00
Project Management	\$ 11,000.00
Dock PIP	\$ 7,000.00
Annotation System - Cyboard	\$ 7,500.00
Remote Press facilities	\$ 8,655.00

WHERE TO GO FOR HELP

The following list does not purport to be exhaustive. This is a list of people or organisations (outside of the Northern Territory government) with whom I had dealings in the course of the Northern Territory project. I found each of them to be well-equipped to advise in areas in which I was lacking.

General consultancy

[3C Consulting Group](#)

Audio/visual/courtroom control/lighting	Rod Louey-Gung (Integrated Media)
Document scanning	Diskcovery
Document management software	Diskcovery
Document presentation software	Diskcovery

I apologise if all of that sounds like an advertisement. They have all been extremely helpful in the Northern Territory undertaking. The only thing is that the sound system which Rod Louey-Gung installed is so acute that you really have to be careful when muttering things to your colleagues if you don't want the world (and the other side) to hear about it.

OTHER LINKS

<http://www.courtroom21.org/>

<http://www.elaw.net.au/index.htm>

<http://www.elaw.net.au/ecourt.htm>

<http://www.e-courts.org/>

[Litigation Support Vendors Association](#)

[Technology for Justice 1998](#)

[Technology for Justice 2000](#)

[Ringtail](#)

[Summation US](#)

[Brief Analyser & Transcript Analyser](#)

<http://www.litsupport.com.au/>

[New Generation Smart Courthouses](#); a paper by Michael Griebel, Charles Short, Ken Hanser, Don Hardenbergh, Jim McMillan, and Jesse Cannon

There are a number of other sites which could be mentioned ... time has not permitted me to trawl through my favourites to find them all.