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# Courtroom Technology - An Introduction To The Onrushing Future

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# Fifth National Court Technology Conference



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## Courtroom Technology - An Introduction To The Onrushing Future

By Fredric I. Lederer, Samuel H. Solomon

***Ideas, ideal and great conceptions are vital to a system of justice, but it must have more than that—there must be delivery and execution. Concepts of justice must have hands and feet or they remain sterile abstractions. The hands and feet we need are efficient means and methods to carry out justice in the shortest possible time and at the lowest possible cost.***[1](#)

### Introduction

Courts—and courtrooms—are changing. Faced with the constant demand to cope with substantial numbers of cases unaccompanied by substantial increases in resources, courts have been forced to use technology to increase their efficiency. At the same time, technological advances have encouraged both lawyers and judges to use technology in the presentation of cases to enhance comprehension of the evidence while decreasing trial time and expense. Lawyers are increasingly bringing evidence presentation systems into the courtroom on an ad hoc basis. Meanwhile, judges and court managers are acquiring technology components while some jurisdictions have created or are in the process of building complete high-technology courtrooms.

### Technology-Augmented Courtrooms

Subject to one's definitions, the world now holds perhaps 10 to 50 high-technology courtrooms—although many more are now in the design or construction stages.[2](#)

Courtroom and chambers technology now includes at least options for:

- Electronic filing;
- ADA assistance;
- Foreign language translation;
- Multimedia court records using stenographic real-time electronic transcript accompanied by digital audio and video;
- Information and evidence retrieval using imaged documents available from CD-ROM storage and retrievable by computer network;
- Access to legal materials and case-specific information from CD-ROM, DVD, or Internet;
- High-technology information and evidence display systems;
- Teleconferencing;
- Videoconferencing--which may include remote first appearance, remote hearing, remote testimony, and remote appellate appearance capabilities; and
- Public access to court information via the Worldwide Web.

What the future holds is most easily seen in Courtroom 21, "The Courtroom of the 21st Century Today," the most technologically advanced trial and appellate courtroom in the world.[3](#) Courtroom 21 has hosted numerous distinguished jurists from other nations visiting Williamsburg, and demonstrations have been conducted abroad via the courtroom's multi-camera videoconferencing systems. Indeed such a demonstration was part of the 1995 Asia-Pacific Intermediate Courts Conference held in Singapore. Much of this article reflects the contents and consequences of this ongoing high-technology experimental facility.

If one were forced to pick only the major categories of technology that are likely to be of the greatest importance in the next ten years, they would be the use of electronic information, high-technology court records, technologically augmented evidence, and argument presentation and video communications via videoconferencing.

Just as electronic filing and integrated electronic case management systems<sup>4</sup> hold enormous promise for decreasing case delays with concomitant personnel decreases, the use of case-related information stored and presented electronically is of great importance. When all documents related to the case, whether administrative or evidentiary, are stored directly on a network or are obtainable by computer from storage media, enormous time and cost savings will result. Not only will delays in finding and presenting information be minimized or eliminated, the need for storage of these materials will largely be obviated. Imaging is the key to this result. At present, most case-related document imaging is done by lawyers either for litigation support purposes or, occasionally, because judges have required it directly or indirectly. Yet, the court itself has an interest in requiring imaging--as the actions of a number of federal judges suggest. The court clerk can create a bare-bones imaging system, if adequately designed, that will produce a basic CD-ROM or DVD-based collection of accurate imaged documents for use by counsel or judge. Elimination of the litigation support aspect should make this approach affordable and economical.

We stand on the verge of useful multimedia trial records.<sup>5</sup> Accessed by a real-time stenographic transcript, these records will permit review of the transcript, audio, video, and all presented evidence via CD-ROM. Courts can choose which components to use, and when necessary, appellate judges can both see and hear critical testimony, for the first time instantly found by use of the electronic transcript.

Technology-presented evidence and argument permit counsel to present information far more clearly than ever before and often in less time than they would have been able to without the technological assistance.<sup>6</sup> Here, television merges with computer stored and created information to create extraordinary capabilities. Courtroom designers and managers must concern themselves not only with the types of information to be used at trial, and their sources, but also with how that information will be displayed--by computer monitors, ordinary televisions, or front projection systems. Judges must be concerned with the possibility of undue prejudice, as the display method itself may affect the way that jurors or judges will evaluate the conveyed information.

Videoconferencing is both the present and the future. Prices drop continuously as the capabilities of videoconferencing systems improve. High-quality, inexpensive two-way first appearances, hearings, and testimony are now possible. For the first time, the delays and expenses inherent in travel by trial participants can be obviated easily. Our assumption that judge, counsel, litigants, and witnesses must all be present in the courtroom at the same time is no longer true. On any single day in the United States, hundreds of courts are using two-way videoconferencing for remote first appearances and arraignments in criminal cases. That limited use is already being expanded by numerous jurisdictions.

The court record, audio, video, and videoconferencing have been addressed in detail in accompanying articles.<sup>7</sup> Accordingly, this paper will address at greater length only evidence and argument presentation.

## **Technology-Augmented Evidence and Argument Presentation**

### ***The importance of augmented presentation***

We live in a highly visual world. Seventy-five percent of what we learn is through our eyes. We are five times as likely to remember something we *see and hear* rather than hear alone. Most importantly, *people are twice as likely to be persuaded* if the arguments in a group (such as during jury deliberations) are buttressed with visual aids. Accordingly, for lawyers, the persuasiveness of a visual approach is as obvious as the fact that we live in a visual society. Those concerned with designing and presiding over technology-augmented courtrooms initially should consider the topic of evidence presentation from the lawyer's perspective.

Lawyers should evaluate source material with an eye towards an appropriate visualization strategy. It may be a simple chart or drawing displayed on an easel; a scale model of the object in question; a video animation or reenactment of the process, product, or theory; projection to convey a big picture or to play dramatic video; and finally the world of TV, which has become the medium of fact for the triers of fact in today's society.

In making their cases, lawyers should appeal to a number of visual senses. At a minimum, both charts and display monitors should be used. Charts depict logical constructs, processes, or arguments. Charts can be used to map out an overview of issues or a time line to organize events. Monitors impact the emotional sense in people and teach them the details. Monitors are powerful devices to visualize critical facts and focus on specific details--to make an emotionally compelling point. Strategically combined, charts and TV pack a one-two punch which can be a critical advantage in "close call" trial situations.

With the use of TV as a medium to persuade, two approaches to accessing and displaying evidence should be considered in evaluating the most effective method for a specific trial: the electronic (or video/TV) and the digital approaches. They can be used individually or, as in Courtroom 21, combined.

### ***The electronic approach***

The "electronic" approach requires a document camera pointing at a base where all types of evidence and visual aids are placed. This permits projection of any type of physical evidence, such as photos, documents, X-rays, MRIs, and objects on one or more televisions. Counsel zooms in to focus on specific details. VCR or computer graphics can be added through an integrated interface. The monitor displays can be consumer-type televisions--nothing special or expensive. One may even connect the televisions to the document camera with a wireless transmission system. The power of the document camera lies in its simplicity. The evidence or visual aid is placed on the base, and a few buttons are used to zoom and focus. Training is minimal, and an attorney can definitely operate the equipment while flying solo. There are add-ons to illustrate, draw, and compare images; record the images on a retrievable disk; and create hard copies of images for evidence preservation and trial argument. The witness can electronically underline or circle texts or images. All these accessories use simple TV video displays.

A document-intensive case requires at least a 35" monitor (preferably even larger) for the jury to read. More than one of these 35" monitors may be required for a jury trial depending upon the configuration of the jury box and the location of the monitor. A lawyer can then display a paragraph or two of a text document while reading the full width. An entire page of text cannot be displayed on the TV monitor since the resolution is not adequate. In any event, it is not the purpose of this display medium to read full pages of text at a glance--it is to teach from the details, to "*control the visual experience of the jury*" by a focused approach as opposed to a distracting big picture. Visual control is accomplished by simply zooming into key parts of the evidence with the press of a button.

### ***The digital approach***

The second approach is a "digital" or paperless trial, which really is a misnomer since paper at trial never disappears. With this approach, all the documents, photos, and video clips are converted to computer storage and usually kept on CD-ROM. One may still attach a document camera or VCR to a digital system for last-minute evidence or displaying extensive video material; however, the majority if not all of the evidence will be displayed in a computer format. This could well include data from a whiteboard; the witness would use special markers to draw on the board or write text and the results would be reproduced on computer monitors and saved to hard disk.

Unlike the document camera used in an electronic trial, in which case the attorney can definitely be the advocate and operator, a digital approach could require a specialized equipment operator. Computer use at trial may in turn require lawyers to deal with issues such as data storage and retrieval, redundancy of systems, display resolution, and bar coding. These are problems an attorney should not worry about in the midst of battle. (High-technology courtrooms like Courtroom 21 are designed for solo litigator operation, but courtrooms with less sophisticated systems may well require an assistant.) Lawyers planning a digital trial will likely benefit from the use of an experienced "litigation associate" to provide for the planning and expertise needed in the case. The consultant will review documents, graphics, and videos and offer ways to display them. They worry about scanning, correcting for imaging mistakes (which are common), bar coding for instant access, and scripting the exhibits into a predefined slide show. The associate can become a "technology second chair" as he or she supports the evidence display at trial.

Courts concerned with equal access to justice issues may wish to supply a central desktop computer for evidence presentation mounted either in a central podium or on a roll-about cart. All computer-based courtrooms, however, should be designed to permit lawyers to use their own laptops.

When high-resolution computer images are used, regular televisions will not suffice. One must use computer or computer data capable displays, which are more expensive and can be difficult to set up. Pretrial preparation includes imaging documents as well as possible scripting of exhibits to display certain aspects of the evidence in a predefined slide show format. A digital approach will more than return its investment in a document-intensive case with a variety of exhibits to be displayed (especially in cross and rebuttal), numerous segments of video to play back, and the need for rapid attack and response. Documents are easily retrieved via bar code scanning, and one uses a light pen or finger (pointing on a touch screen) to zoom onto areas of a document or to highlight, illustrate, and redact. The power to display and edit video "on the fly" is as wonderful as the ability to display full-page documents on high-resolution monitors.

### ***A court perspective***

From a court perspective, technology as just described will *absolutely speed up the trial process* and will offer a more effective presentation of the case. Courts are considering installing, at minimum, monitors for display. If courts are looking at the long-term technology trends, then they should consider digital monitors with the appropriate cabling and switching (to include the ability for the judge to immediately turn off jury monitors) as well as connections for both video and digital systems. Courtroom 21 uses jury, counsel, clerk, and judge computer monitors, a separate display monitor for the judge, and a 40-inch monitor for TV/computer data behind the witness box--as well as two ordinary televisions built into the courtroom wall and a front projection system. Ordinarily, this ideal set of options is too expensive for the limited funds available to a court. Courts with limited budgets are installing video displays with a document camera and appropriate switches and cabling.

Courts need to consider the issues of training and support. What happens when there is a problem...whom should they call? Since responsibility for using the system falls upon the attorney, who will train counsel and maintain their proficiency? If there is a problem mid-trial, who is responsible for support: systems, clerk, outside vendor . . .? One needs to consider these issues very carefully.

One needs to consider monitor cabling and other logistical issues. Monitor choices and layout are becoming complicated and can be limited by budget, space, lines-of-sight, and other issues. Hybrid solutions should be considered. In a recent project, a combination of flat panel displays for the rear jury row, regular monitors for the front jurors, and a large monitor for the gallery, along with smaller monitors for counsel, witness, and the judge, were recommended. The monitor for the judges and clerks was to be shared with their existing computer applications. Many considerations were involved, including installation into the existing jury box, budget costs, and judicial needs. In another courtroom, high-resolution digital projection on a screen was employed with a modification to courtroom lighting. In both these cases, attorneys could use their laptops or bring hard-copy evidence to be placed on the document camera. Computer display resolution issues were carefully considered to deal with future integration with videoconferencing, real-time court reporting, and very high resolution document display software systems. One must also consider how these systems interface with the court audio and real-time record.

Portability is a very important issue when the courtroom is not a permanently installed high-technology courtroom like Courtroom 21. Since digital evidence systems are expensive, there must be ways to design court display systems to leave the cabling intact and have the entire system, monitors, evidence cameras, connections to counsel table, control systems, etc., portable enough for quick connection in a courtroom for a specific case. Portability also impacts the concept of an integrated "presentation podium." One should consider whether the podium itself should be the repository of all of the evidence and digital systems, as in Courtroom 21, or whether they should be in a separate portable cabinet.

Finally, courts need to think about whether to purchase components and support and maintain them themselves or to work with a systems integrator to provide a turnkey operation and support the entire arrangement. This comes down to a cost/value issue.

### **A Reminder--The Goal**

Modern court technology must be a means to an end. Litigation takes too long and is too expensive. If we wish the public to retain faith in our nonviolent system of dispute resolution, then we must find ways to ensure the accuracy of the process and its result while at the same time decreasing time and cost. We must also recognize that trial adjudication directly resolves only a small percentage of all filed cases. Concededly, the possibility of trial is frequently the ultimate threat that drives settlements and alternative dispute resolution. Yet, we must recognize

that the courtroom is only one component of a much greater dispute resolution system. Properly employed, technology *can* enhance accuracy while decreasing time and expense. Designed properly, courthouse systems which recognize that basic data must be used not only in case administration but also in ADR, trial, and appeal can make the greatest improvements and generate the greatest savings.

Technology is, however, only a means to an end, and unfettered and untested use may cause new problems. We must always keep in mind that we are dealing with *people*. On the one hand, we must ensure that whatever technology we choose to use in the administration of justice can and will be used effectively by the participants in the process. On a more basic level, however, it is essential that we do not deprive the legal system of the people's general belief in its humanity and accuracy. We must not risk general public acceptance of the administration of justice by use of what might be perceived as heartless inhuman technology based case disposition.

After considering carefully our systemic goals and the advantages to be gained by the thoughtful employment of courtroom technology, there can be little question that technology adoption can be of great value. ***Our future is now***, and technology-augmented courtrooms are both today's trend and tomorrow's reality.

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1 Chief Justice Warren E. Burger, Address to the American Bar Association as reported in *Vital Speeches*, October 1, 1972, and reprinted in David Shrager & Elizabeth Frost (ed), *The Quotable Lawyer* 159 (1986).

2 See, e.g., Administrative Office of the United States Courts, *Electronic Courtroom/Chambers, An Interim Guide to Courtroom Technologies* (December 1995). In 1997 the Electronic Courtroom project of the Administrative Office of the United States Courts installed disparate courtroom technologies in approximately 30 courtrooms to determine whether greater technology use by the federal courts would be desirable.

3 A joint project of the College of William & Mary School of Law in Virginia and the National Center for State Courts, Courtroom 21, located in the law school's McGlothlin Courtroom, is an international demonstration and experimental courtroom that is continually upgraded. Courtroom 21 uses commercially available technology to determine how technology can best be used to improve the different components of the legal system, given that that system is entirely dependent upon human beings. The Courtroom 21 project seeks to serve as a central location for the international exchange of information concerning the use and consequences of legal technology, particularly technology affecting litigation and the courts.

4 Perhaps augmented in court reporter jurisdictions by "CADI," Court Administrative Data Interchange, in which critical case management data is input only once by the court reporter who initially records it.

5 The world's first multimedia system was unveiled on April 12, 1997, in Williamsburg. A TIMARO Technologies product, the system stores the real-time transcript on the computer's hard disk and then stores synchronized audio and video recording of the proceedings on removal media.

6 On April 11-12, 1997, the Courtroom 21 project, in conjunction with the William & Mary Law School of Law's Legal Technology Seminar, conducted an experimental jury trial designed to produce a rough assessment of the effects of extensive technology use at trial. The case was presided over by the Honorable Roger Strand, United States District Judge for the District of Arizona, likely the United States judge with the longest experience of presiding over a high-technology courtroom. The jury ranged in age from 18 to over 70 years old. All endorsed the visual presentation of evidence. Witness examination was far speedier than anticipated. Preliminary analysis suggests that this substantial time savings was caused both by obviating the need for counsel to continually move around the courtroom and the decreased need for attorney questions when evidence is adduced in visual form.

7 April Artegan, *The Technology Augmented Court Record* (1997); Martin Gruen & Tom Wetter, *Courtroom Audio, Video and Videoconferencing* (1997).

8 This process need not be not the same as imaging for discovery as there are different quality tolerances.

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## **Biographical Information**

This biographical information may date from as far back as 1997. Please keep in mind that it may no longer be accurate.

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Frederic Lederer is chancellor professor of law at the College of William & Mary's School of Law and founder and director of the Courtroom 21 Project, which includes the world's most technologically advanced trial and appellate courtroom. Prior to joining the William & Mary faculty, Mr. Lederer served as a member of the United States Army's Judge Advocate General's Corps. He also has served as prosecutor, defense counsel and trial judge. Mr. Lederer's areas of specialization include evidence, trial practice, criminal procedure, military law and legal technology. He has written numerous books and articles as well as two law-related educational television series.

Samuel H. Solomon

Samuel H. Solomon is the president of DOAR Communications, a firm specializing in courtroom presentation technologies. He previously held senior technology positions at McGraw-Hill and Lehman Brothers. He has given numerous presentations on demonstrative evidence and technology and has written several articles for legal journals and magazines.