

Courtroom Technology: For Trial Lawyers, the Future Is Now

By Frederic I. Lederer

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Mollie, where are we on the Stanhope case? Are we ready for trial next week? We're in fairly good shape, Fred. Tammi has completed the discovery database. I've finished our PowerPoint opening and have loaded all the documents and photographs we're offering into evidence into our trial presentation software. We have an appointment for tomorrow to visit the courtroom to ensure that our laptop computers are compatible with the courtroom's display technology. Oh, that's great. Did I tell you that I've subscribed to the Courtroom Connect courtroom Internet access service? We'll be able to have Dr. Archibald's help from Williamsburg when we cross their expert. She'll be in Williamsburg following the real-time court transcript, and we'll use instant messaging so that she can give us a hand in our cross. That's great, but what about Smith's testimony? Well, that's apt to be a problem. When he was interviewed they made a full-scale multimedia transcript. Any inconsistency, and we'll hear and see him up on the screen, life-size, spilling his guts along with the scrolling transcript. They burned it to a DVD, and it's loaded on their notebook computer, which, like ours, will be plugged into the display system at the podium. What about that eyewitness, the one with cancer? The current word is that she will be able to come to court, so no one will be using the courtroom's remote testimony capabilities; we won't have to e-file those briefs on the legality of remote testimony. But I just heard that we may not have a sign language interpreter available for that witness. We may have to use the courtroom's videoconferencing for that.

Does this exchange ring true for you? If not-and it is far more realistic than it might seem, based loosely on a mock terrorism case we conducted in 2003 in a Courtroom 21 laboratory trial-it may be true sooner than you would expect; for as Bob Dylan wrote, "the times they are a-changing."

Courts are moving quickly to adopt pretrial technology, especially e-filing, case management, and electronic docketing. More and more, counsel-even counsel in criminal cases-will communicate electronically with the court. It is, however, the trial itself that is the prime focus of this status report.

Criminal trials are in the process of change as a growing number of courtrooms nationwide offer counsel built-in, permanently installed technology. Of 1,366 courtrooms in United States district courts, 363 have laptop computer wiring and 370 have some form of computer monitor displays for the jury. (Elizabeth C. Wiggins, Meghan A. Dunn, and George Cort, FEDERAL JUDICIAL CENTER SURVEY ON COURTROOM TECHNOLOGY 8 (Federal Judicial Center, draft edition August 2003), hereinafter "Survey on Courtroom Technology".) Still more courtrooms have access to portable equipment. The survey found that "94% of districts have access to an evidence camera and 66% to a digital projector and projection screen."(Id.) Much of this portable

equipment is available on request. In the absence of available state data, anecdotal evidence-including reports from vendors that install such components-corroborates that state courts are also experiencing a technology boom. There are a number of major state installations, such as the Ninth Judicial Circuit's in Orlando, Florida. Even on a smaller scale, many courtrooms have equipment such as document cameras installed or available on request. In courtrooms lacking such equipment, lawyers sometimes seek the court's consent to provide their own.

To many lawyers, "courtroom technology" suggests dramatic civil case computer recreations. However, technology is much more varied and is seeing greater use in the criminal arena. Although high-end technology is still far more common in civil trials, it has been used for years in high-profile criminal cases such as the O. J. Simpson and Oklahoma City bombing trials. One of the first computer reconstruction animations in a criminal case was used in the 1994 murder trial of James Mitchell. (*People v. Mitchell*, No. SC-12462-A (Cal. App. 1st Dist. 1994) (use of reconstruction was error but harmless); see generally Comment, Mary C. Kelly & Jack N. Bernstein, *Virtual Reality: The Reality of Getting It Admitted*, 13 J. MARSHALL J. COMPUTER & INFO. L. 145 (1994).) Meanwhile, lesser-known cases are tried with the assistance of document cameras, computer notebook and electronic whiteboards, and computer animations. We are in a time of transition. Sooner than may seem possible, technology use at trial will be commonplace.

From document cameras to . . .

One of the most basic courtroom technologies used to present evidence is the document camera, which projects paper evidence via televised images on one or more display screens. Document cameras have been widely adopted, especially by prosecutors. They are simple to use and do not require computers. In many courtrooms they are the only display technology available. But even today, as court administrators seek funds to install their first such device, document cameras are becoming the technology of the past.

Much of our evidence now begins as computer data. Indeed, one study found that 93 percent of all information created in 1999 was generated in digital form. (JOINT ADMINISTRATIVE OFFICE/DEPARTMENT OF JUSTICE WORKING GROUP ON ELECTRONIC TECHNOLOGY IN THE CRIMINAL JUSTICE SYSTEM 3 (2003) citing Kenneth J. Withers, *Electronic Discovery: The Challenges and Opportunities of Electronic Evidence*, Presentation to Federal Judicial Center, National Workshop for Magistrate Judges, July 23-25, 2001, available at <http://www.kenwithers.com/articles/sandiego/at slide02.html> and [slide03.html](http://www.kenwithers.com/articles/sandiego/at slide03.html).)

E-mail now surpasses traditional "snail mail." (Id.) Search and seizure of computers and their data and subpoenas served on Internet service providers are no longer news-they're customary, and, especially for the prosecution, often essential. With electronic information comes new ways of searching that information. For example, with the use of specialized software it is possible to search digitally recorded conversations by typing in and scanning for specific text. We can even replicate events electronically using what may seem like something from a science fiction-immersive virtual reality (discussed in detail below).

In short, the very nature of trial evidence is pushing us in the direction of electronic evidence presentation at the same time that our population is becoming increasingly computer literate and technologically dependent.

"But first a word from our sponsor"

The Courtroom 21 Project-"The Courtroom of the 21st Century"-is a joint effort of William & Mary Law School and the National Center for State Courts. The world center for experimental work in courtroom technology, it includes William & Mary's McGlothlin Courtroom, the world's most technologically advanced trial and appellate courtroom. (See generally [www. Courtroom21.net](http://www.Courtroom21.net);

Fredric I. Lederer, *The Courtroom 21 Project: Creating the Courtroom of the 21st Century*, JUDGES' J., Winter 2004.) This article is based on a decade of experience in pushing courtroom technology to and past the "bleeding edge," including the annual Courtroom 21 laboratory trials, which for the last three years have involved major simulated criminal prosecutions.

Courtroom technology is being adopted by the courts and counsel because it is often more efficient than traditional approaches, does a better job of conveying information to the fact finder, and sometimes makes possible that which could not be done in its absence (such as remote testimony from a witness who cannot travel to court). Judges particularly like it because it substantially speeds up evidence presentation. Many lawyers like it because they believe that it enhances their persuasive abilities.

Based on the Courtroom 21 experience, modern trial courtroom technology can be roughly divided into information (evidence) presentation, remote appearances, court record, "counsel communications" (for example, Internet access from counsel table), assistive technology (including interpretation), jury deliberations, and appellate matters.

It's all about presentation

The heart of any lawyer's case, of course, is the presentation of information to the fact finder, whether in the form of an opening statement, evidence, or closing argument. The technology used for this purpose is termed "evidence presentation" technology. In a traditional trial, counsel present the case orally with documentary and real evidence, sometimes augmented by demonstrative evidence. A trial that relies on technology inherently emphasizes the visual display of information to the fact finder—so much so that it is likely that jurors will direct their attention more to the evidence than to counsel. The psychological effects of such a shift on a lawyer and his or her presentation can be substantial. Many trial lawyers are accustomed to being the center of attention. Refocusing that attention to the evidence or to visually displayed openings and closings can leave counsel feeling rather abandoned.

In deciding what evidence presentation technologies to use, counsel must carefully consider the material to be presented, the technology used to present it, and the means by which the fact finder will experience it (usually by means of visual displays).

Evidence presentation options

When trial counsel use "hard copy," such as physical documents, photographs, and other "real" evidence, the technology of choice is the document camera. A document camera is a vertically mounted television camera that transmits an image of whatever item is placed on its base. It includes a zoom feature that allows counsel to enlarge and emphasize key portions of the text or image. Document cameras excel at showing photographs and enlarging portions of a text. Showing a full manuscript-sized piece of paper "vertically" (in portrait mode), even if the document can be placed on the base "horizontally" (landscape mode) and electronically rotated, may result in text too small to be easily viewed. More sophisticated document cameras permit counsel to record and electronically store images for later display; some can show side-by-side images, as in the case of a known fingerprint displayed next to a sample found at the scene of a crime.

Although document cameras are highly useful, their utility diminishes when the evidence originates or is easily available in computer format. The tool of choice then is a computer. Because most courts are concerned about computer viruses and the like, few will provide counsel a court-owned computer. Instead, the court often makes available a projector or a video distribution system that includes various display options. Counsel bring in a notebook computer

and attaches it to the projector or distribution system. Anything shown on the computer can then be displayed in the courtroom.

In addition to documents and images that originated as computer data, it is now easy to import data into computers. Photos taken by digital cameras can be loaded into the computer. Images of any kind, including documents, can be scanned and similarly imported. When scanned documents are then processed by optical character recognition programs, the text can be searched electronically.

Wiretaps and other forms of audio recording are increasingly being made in digital audio form. Playback is via a CD or DVD player. Video, whether or not accompanied by audio, is also increasingly in a digital format. Even when recorded in analog form on "traditional" tape, it is now easy to digitalize it and place it on disk. Computer animations, which used to be made available to counsel on videotape (or on laserdiscs), are now available on CD and DVD disks. Consequently, when we design courtrooms or hearing rooms, we specify multifunction players that can play videotapes, CDs, and DVDs. When properly recorded the first time, depositions (albeit uncommon in most criminal cases) and law enforcement interrogations can now be made into computer-based multimedia presentations. We see and hear the person speaking while viewing (at proponent counsel's option) a scrolling and searchable transcript of what is being said.

New forms of evidence are now available. Courtroom 21's 2002 laboratory trial was a federal homicide prosecution of a medical device company accused of manufacturing a stent that it knew or should have known would kill its first patient. That case included the first known use of holographic evidence (allowing the circulatory system to be seen in three dimensions in the air in front of each juror) and immersive virtual reality. Defense claimed that the patient's death was due to the malpractice of the chief surgeon. The credibility of the defense witness, a nurse, depended upon whether she had been able to see the surgeon's wrists during the implantation operation. A team of scientists from the University of California at Santa Barbara recreated the operating room in the computer. Each witness donned a special headset that displayed the operating room. The witness could move about the courtroom, lean over, twist, or nod, and see what he or she would have seen if in the operating room. The jury, other trial participants, and observers saw what the witness was viewing on a large screen. As it turned out, the defense witness was unable to see the doctor's wrists from where she stood during the critical part of the surgery, totally discrediting her testimony.

Admissibility and sufficiency

All digital evidence presents the possibility of alteration or fabrication. From an evidentiary standpoint, a traditional authentication foundation, however minimal, likely will suffice for admissibility. (See generally Fredric Lederer, *The New Courtroom: The Intersection of Evidence and Technology: Some Thoughts on the Evidentiary Aspects of Technologically Produced or Presented Evidence*, 28 SW. U. L. REV. 389 (1999).) Admissibility does not equate with sufficiency, of course, and the public's general knowledge that filmmakers, for example, can use computers to resurrect dinosaurs, makes allegations of digital alteration a potentially major jury issue when it comes to weight.

Computer animations and immersive virtual reality can raise other issues, as well, including foundational issues, potential scientific evidence and expert issues, and, most critically, questions of unfair prejudice. Indeed, counsel trying to block visually displayed evidence may find unfair prejudice the most useful objection available.

Presentation software

If counsel want to present their information/evidence via computer, they also need software that will make that possible. Microsoft's PowerPoint and competing "slide show" products can be used to present a wide variety of digital information. They are especially useful if counsel wish to create text-based or annotated electronic slides, particularly for openings and closings. PowerPoint is potentially quite potent. In our 2003 experimental terrorist case, *United States v. Stanhope*, FTI Consulting, Inc., produced a highly useful series of slides that allowed its expert witness to trace money transfers throughout much of the world, complete with bank document images and an accompanying electronic time line.

Many trial lawyers, however, find slide show programs to be less useful than the specialized trial programs that are now available. Sanction, Trial Director, and Trial Pro are some of the major multifaceted presentation programs with significant trial capabilities. Counsel can call up evidence via bar code readers and can enlarge or annotate portions of displayed images. In general, it allows lawyers to do much that in prior years had to be done by demonstrative evidence companies. Most lawyers especially value the "call-out"-the on-the-fly ability to take pieces of text or image and immediately enlarge them for emphasis during witness examination or closing argument. Although highly effective, Courtroom 21 experiments have demonstrated an unexpected downside to this process. When counsel obscure the underlying document with the call-out, or fail to leave the evidentiary image on the display long enough for the jurors to read it, jurors conclude that counsel are hiding adverse evidence. We suggest that, when applicable, judges in their preliminary instructions advise jurors that they will receive all documents during jury deliberations.

Human cost and other consequences

The use of courtroom technology, especially evidence presentation technology, comes at a financial and human cost. Although most who work in this area agree that evidence presentation technology saves at least a quarter to a third of a traditional trial's time (some say up to 50 percent), part of that savings comes at the cost of increased pretrial preparation. That preparation also may require the assistance of new staff or outside vendors. Although we believe that substantial time and money are saved, the amount is difficult to quantify.

At the same time, in-court electronic presentation of information is a skill that many lawyers have not yet acquired. They must either master it individually, obtain the help of others in their firms, or hire an outside vendor. One of the Courtroom 21 Project's senior legal advisors much prefers to have his evidence technology operated by an outside vendor; although he is fully capable of doing so himself, he feels that it is less distracting for him-especially if an unforeseen problem should occur.

The increased speed of tech-augmented trials can also increase stress. It is hard to overstate how fast a high-tech trial actually moves and how little time for courtroom reflection that leaves.

Displays

High-tech trials are predominantly visual trials. For that to be true, images must be able to be seen. Most high-tech courtrooms provide the judge, witness, and counsel with small flat screen (LCD) monitors. Evidentiary arguments can be made with only judge and counsel seeing the image, for example. Increasingly, the witness monitor is likely to be a touch screen. In other words, the witness can annotate the displayed image using the related software to emphasize key text or portions of the image, including the enlargement of key portions.

The two primary means of displaying images to jurors are flat screen (LCD) monitors (usually a screen for every one to two jurors) and/or a large screen and projector. Traditionally, most lawyers tend to prefer a single large screen for jury trials believing that the larger image is more

persuasive than numerous small screens. Many also believe that the single focus creates jury bonding and can reinforce the centrality of the lawyer's case presentation. Others, including many judges, find the small screen preferable, especially for document display. And the smaller screens usually do not require that courtroom lights be dimmed, although with modern projectors that is less necessary than it used to be. We believe that one or two large televisions located near the jury box are not sufficient when entire documents are to be displayed.

There are display options other than a single large screen or small LCD monitors. Large, rear projection monitors, such as the 66-inch diagonal 3000i SMART Board or 50-inch or larger plasma screens, are now available. These monitors permit the display of video in any form, including computer images. When equipped with the proper hardware and software, these monitors also allow the use of fingers or lightpens to annotate the displayed image. A witness can, for example, enlarge, underline, circle, or otherwise annotate part of the displayed image, and the annotation will appear on all the courtroom displays.

Lawyers frequently question the desirability of displaying evidence on screens. Concurrent display is obviously faster and more efficient than any form of paper review. However, that begs the question. It has been our experience that jurors have no problem, whatever their age, with viewing material on screens. In one experiment in which we intentionally used a paper document, an 80-year-old juror later complained of time lost and asked why it could not have been shown on her monitor.

Remote appearances

The use of videoconferencing for criminal justice purposes was for many years primarily limited to remote first appearances and remote arraignments. We are now seeing an increased use of the technology for in-court use on the merits, especially for remote witness testimony. Although primarily used in civil cases (see Federal Rule of Civil Procedure 43(a)) and in appeals for remote counsel and remote judges, the options provided by this technology are becoming more attractive.

From a pragmatic perspective, the technology itself is simple. The remote witness or participant appears in the courtroom on a display device, preferably life-size. A camera located with the display ensures that when a courtroom participant looks at the remote person, as when counsel question a remote witness, there is effective eye-to-eye contact. With today's technology, video and sound should be perfectly coordinated; only the most rapid movement may show some variance. The court can use ISDN connections (think high-capacity telephone lines) or it can be Internet based. Video conferencing can be permanently present in a courtroom, as is true for 154 federal courtrooms (*supra*, SURVEY ON COURTROOM TECHNOLOGY), or can be rolled into the courtroom as portable units.

Past Courtroom 21 experiments show that, in civil personal injury cases in which the parties concede liability but dispute damages, there is no statistically significant difference in damage awards when medical experts testified in person or remotely. Although we have not been able to mount a similarly controlled experiment in criminal cases, our laboratory trials suggest that remote testimony is likely "safe," at least so long as the remote witness appears life-size in a display immediately behind the witness stand and is subject to cross-examination under oath.

Of course, the legal issues associated with remote testimony are by no means as simple as the use of the technology. The oath itself presents significant legal questions: Can the oath be administered in the trial jurisdiction and be legally effective when the witness is in another jurisdiction? In the seminal case of *State v. Harrell*, 709 So. 2d 1364 (Fla.), cert. denied, 525 U.S. 903 (1998), the Florida Supreme Court held that the Florida oath administered to Argentine citizens in Argentina was legally effective in light of the extradition treaty then in force between

the United States and Argentina. Sixth Amendment confrontation presents an even more challenging question when the prosecution seeks to use remote testimony against the defense. When the Bill of Rights was written there were only two real choices, in-court testimony or oral or written hearsay. Remote testimony permits live, two-way witness examination, a far cry from documentary hearsay. The advent of high-definition transmission even suggests the possibility of following the least rivulet of sweat as it slowly rolls down the face-if we are concerned with visual resolution. We can replicate the same witness image to be found in the courtroom. If we want to see the hands of the witness, we can ensure that the image is large enough to include them. What we cannot tell, however, is whether the physical separation affects the willingness of the witness to lie. Remote testimony is often used for child witnesses in sexual molestation cases. One of the arguments in favor of such testimony is that even with two-way transmission, the psychic separation between witness and accused in the courtroom is necessary to permit free testimony. If there is indeed such a psychic separation in the case of an adult witness, certainly a plausible argument, it suggests that we ought to proceed with special care when using remote testimony. Indeed, the court in *Harrell* balanced the need for the testimony, including the unavailability of the victim eyewitnesses, against the defendant's confrontation rights, as well as the technology actually used before deciding that it complied with both the state and federal constitutions.

The United States Supreme Court has yet to rule on the confrontation issue, having denied certiorari in *Harrell*. However, the Court, with Justices Breyer and O'Connor dissenting, in a rather unusual decision, chose not to forward to Congress the proposed 2002 amendment to Rule 26(b) of the Federal Rules of Criminal Procedure that would have permitted remote testimony given sufficient necessity. Stating that he shared "the majority's view that the Judicial Conference's proposed [rule] is of dubious validity under the Confrontation Clause," Justice Scalia stated:

As we made clear in *Craig* . . . a purpose of the Confrontation Clause is ordinarily to compel accusers to make their accusations in the defendant's presence-which is not equivalent to making them in a room that contains a television set beaming electrons that portray the defendant's image. Virtual confrontation might be sufficient to protect virtual constitutional rights; I doubt whether it is sufficient to protect real ones.

(Available at http://a257.g.akamaitech.net/7/257/2422/29apr20021600/www.supremecourtus.gov/orders/courtorders/frcr02p_scalia.pdf (visited December 8, 2003).)

Justice Scalia's views seem clear. However, the Court's decision not to forward the proposed amendment to Congress (it did forward amendments permitting remote first appearances) has no precedential value. We must await an actual case. Yet remote testimony need not present a confrontation problem as the testimony might be defense testimony.

In the recent case of *Commonwealth v. Malvo*, one of the two "Washington Sniper cases," the defense sought a large number of witnesses from the United States, Jamaica, and Antigua. Although the trial judge initially granted the physical attendance of most of the witnesses, she also suggested the possibility that a sizable number might best testify by remote testimony. The defense adopted the judge's suggestion and requested that remote testimony be used for both the merits and, should a finding of guilty result, capital sentencing witnesses. The Courtroom 21 Project acted as executive agent to determine the feasibility of such testimony. After I reported to the court that such testimony was feasible and potentially economical, the court ruled against the defense motion, asserting the government's opposition to the remote testimony. Although the trial judge did not fully explain her rationale in her oral decision from the bench, it appears likely that the absence of Virginia's statutory law to expressly permit such testimony may have been a substantial factor in her decision.

Although videoconferencing is normally thought of as applicable either to pretrial matters or to remote witness testimony, it has other possibilities. We have used it experimentally for both

remote judges and remote counsel. Indeed, in our experimental 2001 laboratory, trial prosecution cocounsel appeared live from the United Kingdom for a critical witness examination. In our 2003 laboratory trial, an al Qaeda financing prosecution, we used videoconferencing for a three-court concurrent hearing when a key witness in Australia asserted the attorney-client privilege under Australian, British, and United States law. Although the forum court ordinarily makes such decisions, obtaining the testimony of the unextradited witness required such an unusual hearing.

Court record

Counsel too often take the court record for granted. In addition to its appellate uses, the trial transcript is often useful, if not critical, as an aid to cross-examination, closing argument, and preparation of jury instructions. Often the difficulty is that the transcript is not available quickly enough to serve all of counsel's needs. That is no longer true. Courts that use digital electronic recording can now supply counsel with a digital audio CD (the newest systems also can record video when the courtroom system is so designed) at the end of a trial session. Such a CD is not a transcript, of course, but does provide counsel with the ability to find testimony or legal rulings. Often more immediately useful is realtime transcription. Provided by either a stenographic or voice-writing court reporter using a voice recognition computer system trained to the reporter's voice, realtime is an immediate rough draft of the transcript provided to counsel's notebook computer. Using appropriate software, not only can counsel store the transcript, but also annotate it by issue or otherwise.

Although realtime transcription has been with us for many years, it is now far more widely available. Many more court reporters are prepared to offer the service. Realtime has other uses as well. It can be transmitted through the Internet to the office, to a consulting expert, or to anywhere counsel may need. Coupled with counsel communications, discussed below, realtime means that the lawyer can have a nonresident team that is fully cognizant of everything that is happening in court just as it happens, and able to respond to trial counsel's immediate needs.

Court record technology is developing rapidly and converging towards a merger of all the applicable technologies. The Courtroom 21 Project, for example, makes a multimedia court record that consists of the realtime transcript, digital audio and video, and images of the evidence as well. The record can be made available remotely via password or published in realtime to the Web for worldwide access. This not only further enhances the possible use of remote assistants, it also holds the promise of changing the nature of appellate review in nonjury cases. When the appellate court can review witness demeanor with the ease of reading a text transcript until an "instant replay" is necessary, will the court still defer to the factual decisions of the trial judge based upon the judge's in-court witness credibility decisions?

Counsel communications

With the advent of dial-up modems counsel have long had the theoretical option of communication from the counsel table to the outside world. In practice this was a technological option that was not often available or useful. Broadband Internet access is now increasingly available. Although most courts remain reluctant to let lawyers access the courthouse computer network, some have created independent networks for counsel's use. Other courts take advantage of Courtroom Connect's partnerships where the company installs independent wireless connectivity free of charge to the court in return for charging counsel for its use. Once counsel can reach the Internet, especially when the court record is made concurrently available, trial lawyers have useful access to experts, colleagues at the office, and others who may be needed during trial.

Counsel's ability to communicate electronically holds still other possibilities. In Courtroom 21's 2002 laboratory trial, counsel and judge had the ability to communicate silently via instant

messaging, and the defense made an evidentiary "instant messaging" objection. Although mystifying to the jury, which had not been advised of its possibility, judge and counsel found the process highly useful and efficient. It permitted candid but completely confidential argument without the risk of jury prejudice. Only useful for brief matters, the process nonetheless was superior to the traditional sidebar, given the all too frequent problems in keeping such sidebars, let alone the objection itself, confidential.

Assistive technology and interpretation

All trial participants and observers ought to be able to function freely and easily in the court environment. Assistive technologies help those with special needs, especially people who have difficulty hearing, seeing, or moving in the courtroom environment. Real-time transcription, supplied by the court reporter, enables nonhearing trial participants to read the court proceedings. (Those who have difficulty hearing can use infrared headphones for personal audio reinforcement.) Videoconferencing allows sign language interpreters to work for jurisdictions that lack such resources. Blind participants can read documents through scanning and conversion to Braille (as well as programs that will read documents to the listener). Lifts allow wheelchair-bound participants to take their appropriate courtroom locations with dignity. High-tech trial practice may create special needs for some lawyers. Accordingly, the Courtroom 21 Project has created a special Assistive Litigator's Podium for the trial lawyer who uses a wheelchair. Counsel wheels into the automated podium that, along with the presentation technology, can mechanically rotate. This, too, is "courtroom technology."

Interpretation is not customarily viewed as assistive technology, although it can be seen as such when sign language or foreign language interpretation is made available in the courtroom via videoconferencing. It is, however, often critical in its own right. There is no known adequate substitute at present for a human interpreter. However, consecutive or concurrent remote interpretation supplied by telephone or videoconference can prove critical in some cases.

Jury deliberations

Courtroom technology does not end with closing arguments. It now can provide jurors with a scrolling copy of the instructions as read by the judge. Of even greater interest is the new technology that allows jurors to use displays to review evidence during deliberations—a resource available even in cases in which no other trial technology was used. Courtroom 21 research shows that jurors are at ease using such technology, as demonstrated in a test case that involved a major federal prosecution with numerous evidentiary exhibits. The test garnered praise from jurors, one of whom noted that he could not imagine deliberating without such assistance.

As the use of courtroom technology to try cases increases, we will have to decide whether jurors should be allowed to electronically view those exhibits that were displayed to them as only electronic images. Courtroom 21 experiments show this should not be difficult, and created a useful technique and protocol that appears likely to be successful in all cases.

A note about appeals

Court technology has two effects at the appellate level. First, and critically, it presents the reviewing court with the need to be able to understand what happened at trial. In this respect, we find that judges and trial counsel alike seem to find traditional methods of preserving the record inadequate. Rather than simply describing a call-out as, "Let the record reflect that counsel has isolated the last paragraph of Defense Exhibit H, enlarged it, and circled the last line in red," nearly everyone now wants the record to preserve what counsel actually did. Because few if any courts have the ability to electronically capture all such annotations as they are made, many courts print out copies of each individual electronic image change.

In addition to coping with technology use at trial, the appellate court may find itself using the same technology in the appellate process. In three cases argued before the United States Court of Appeals for the Armed Forces sitting at William & Mary's McGlothlin Courtroom, we have had, among other technology uses, remote judicial appearances; appellate briefs complete with the trial record on CD-ROM; and appellate counsel using electronic evidence techniques to argue the case. When preparing for a trial, counsel may wish to consider how to technologically augment the appeal should they fail to secure a victory at trial.

And there aren't any problems with this-right?

No lawyer who has been the victim of a computer or cellphone failure is likely to assume that the use of courtroom technology is without aggravation or risk. Although most trial technology is sound and reliable, anything mechanical or electronic inherently includes the risk of unexpected failure. That presents special problems. Whether counsel moves to display evidence, begin an opening, or continue with a closing, a troublesome series of events occurs when courtroom technology fails. At the least, the presentation is interrupted; and at its worst, counsel may have to abandon a planned approach and quickly substitute a new one, something that some lawyers find difficult. Loss of stature in front of judge and jury is a possibility, although a Courtroom 21 experiment showed that jury sympathy for counsel grew for the lawyer who experienced a technical failure (though it did not result in victory).

From a judge's perspective, however, the problem is especially acute as the court is frequently unable to diagnose the problem, or determine if it can be fixed, by whom, or how long that might take. For example, a display difficulty could be the operator's (in this case, counsel's) fault, the result of a computer malfunction, a faulty courtroom switch or switch setting, a defective cable, or a problem with the display system itself. If counsel cannot determine the cause, few courts have the trained staff to immediately evaluate the problem. Most judges will give counsel a small amount of time to resolve matters before telling counsel to move on without the technology, even when it is likely that the problem rests within the court's own systems. It is the risk of technical complications that impels many otherwise capable trial lawyers to retain expert vendor support for trial presentations.

The Courtroom 21 Court Affiliates, a network of state, federal, and United States courts interested in the most effective use of courtroom technology, discussed this problem at its 2003 conference. The report is due out soon, but the basic answer appears unavoidable. When technology fails, counsel must proceed with the trial—not unlike what happens in more traditional trials when faced with such unexpected obstacles as the illness of an associate or leaving one's polished trial notebook at home.

The more difficult issues are systemic ones. How will the increased use of courtroom technology affect both the reality and perceptions of fairness and justice? Will it make life easier or more complicated for trial participants? Will there be cost savings or increases? In February 2004, with the cosponsorship of the William & Mary Institute of Bill of Rights Law, the ABA Criminal Justice Section, the ABA Judicial Administration Division, the Federal Bar Association Federal Litigation Section, and with the support of the Federal Judicial Center, the Courtroom 21 International Conference on the Legal and Policy Implications of Courtroom Technology was held to discuss these and other issues. We hope it is the beginning of an ongoing international discussion of these important concerns. A follow-on conference will be held in February 2005 in New Orleans.

And in conclusion . . .

The last decade's work has convinced those of us in the Courtroom 21 Project that courtroom technology is an extraordinary help to most trial lawyers. It is far from perfect, and wise counsel often must know when not to use it as well as when to employ it. We anticipate that technology

will become a routine part of most lawyers' trial work. Yet, surprisingly "the most frequently cited reason for not receiving training in courtroom technologies is that it is not necessary." (2002 ABA TECHNOLOGY RESOURCE CENTER SURVEY REPORT at xiv (2002).) We do not agree.

Already, William & Mary Law School requires every second-year law student to be instructed in the basic use of courtroom technology, and offers those interested in trial work a technology-augmented trial advocacy course. Judges frequently report that their biggest complaint in the area of courtroom technology is not with the technology, but counsel's inability to use it effectively.

In summary, courtroom technology is rapidly becoming an ordinary and necessary aspect of trial presentation, and the wise lawyer will learn when and how to use it effectively. After all, we do like to win, don't we?