

## The Basics of a Technology-Enhanced Courtroom

By Judge Herbert B. Dixon Jr.

The technology used in litigation has changed dramatically over the last 10 years. Today's technology offers products that feature machine learning, artificial intelligence, virtual reality, autonomous capability, and more. It includes devices that are wirelessly connected by protocols and processes that make up the Internet of Things. Today's technology includes machines that analyze data and make decisions or recommendations. And today's technology also includes information stored in the cloud that is accessible worldwide. Even with all of these advances, lawyers and judges still must be familiar with basic courtroom technology, which still operates similarly to the way it operated 10 years ago.

This column is intended to present for today's new generation and review for others the basic technology that should be a part of any technology-enhanced courtroom or that in portable format can be provided to most courtrooms.<sup>1</sup>

### Introduction

One would be surprised to find a courthouse that has not hosted at least one trial that featured the use of basic courtroom technology. In some of these instances, the litigants themselves may have supplied the equipment because there was none available in the courthouse. Today, we are likely to find basic technology equipment in most courthouses for in-courtroom presentations, either portable equipment assigned to courtrooms as needed or equipment already installed in the courtroom. Whatever the circumstances in a particular courthouse (or administrative agency), lawyers and judges must be prepared to use a basic level of technology during opening statements, evidence presentation, and closing arguments during administrative, civil, and criminal proceedings. Basic courtroom technology also includes the ability to permit participation from



remote locations, such as testimony from an out-of-town witness or participation by counsel or a judge. Remote participation by a judge, counsel, or witness could avoid the prospect of rescheduling a proceeding weeks or months later depending on the availability of other participants.

Technology-based evidence presentation, once learned, is substantially faster than moving a physical exhibit around the courtroom. Many technology enthusiasts claim that a party using technology to present argument and evidence may have the upper hand when compared with those who use no technology to aid their presentation. Other enthusiasts say the use of courtroom technology merely facilitates the storytelling but does not make a case where there is none. Judges who preside in technology-enhanced courtrooms will likely encourage the litigants to use the basic technology setup.

### Overview

Before the use of courtroom technology, counsel relied on their courtroom presence, oratory, and enlarged exhibits to carry the day. Today, courtroom presence and oratory have their place, but litigants will likely need much more to meet the

expectations of the jury hearing their case.

The federal courts were the first to install courtroom technology system-wide. Many state and local jurisdictions have installed technology-enhanced courtrooms in locations where there is a high likelihood of use and provide portable technology units in some courthouses as needed. However, these state and local installations do not make up as much of the system as one is likely to find in the federal courts. Even in those locations where the technology is available, the equipment does not operate itself. Effective use of the equipment requires at least one person with a sufficient understanding of the technology to use it for its intended purpose.

### Video Displays

An early issue that the person creating a technology-enhanced courtroom must address concerns the design of the video display system. This system can take on various configurations. One configuration involves a single projector screen or large monitor strategically placed in the courtroom. Other configurations involve multiple monitors around the courtroom for viewing by counsel and the parties, and the judge, jury, and witness.

If images are displayed on a single projector screen, one must consider various factors before deciding on the placement location of the projector and the screen. If the screen cannot receive the image from a direct perpendicular angle, the image on the screen will be skewed—looking something like a trapezoid or other strange geometric shape and not a perfect square or rectangle. This phenomenon, known as the “keystone effect” or “keystoning,” is the distortion of an image projected on a screen at an angle due to a projector being higher, lower, or angled from either side of the screen’s center point. The resulting image on the screen is distracting to the presenter and the viewer. Most modern-day projectors have a keystone correction feature to solve this distortion—either by manual or electronic adjustment.

This viewing problem does not necessarily disappear if the presentation is viewed on a large, flat-screen monitor. If the angle of viewing is significantly nonperpendicular, the image seen from the viewer’s perspective will yield a similarly skewed appearance as when an image is projected on a screen at an angle. The essence of this discussion is that the placement location of a projector screen or monitor is an important issue. The viewers most perpendicular to the projected image should be the audience for whom the projected image is intended, which is often the jury.

This discussion demonstrates the benefit of having multiple monitors in the courtroom so any viewer, including the jury, judge, and counsel, may look toward the monitor that provides the best personal viewing perspective. This may involve placing one monitor directly across the room or hanging it from the ceiling facing the jury and installing additional monitors at the witness stand and counsel table.

Regarding cost, the price of today’s large, flat-screen, high-definition monitors is on par with high-intensity projectors. In fact, the continuing price drop of high-definition monitors has reached the point where large monitors often cost less than high-intensity projectors. Also, the flat-screen monitors provide a brighter, sharper, and more pleasing image than the image on a projector screen.

The last consideration for monitor

placement concerns whether the jurors’ attention should be directed to one large monitor or smaller individual (or jointly shared) monitors installed in the jury box. Among counsel, the preference is for a single large monitor. They assert that a single monitor allows more control by the lawyer/presenter to direct the jury’s attention to some aspect of the image on the monitor. If there are individual monitors in the jury box, jurors tend to prefer their personal monitor to review the exhibit and are rarely inclined to look away from their monitor toward the presenter. In the view of many lawyers, this results in a loss of connection with the individual jurors. In addition, jurors may be absorbed with their own thoughts concerning what they consider important about the image they are viewing on their personal or shared monitor.

### Annotation Monitors

Annotation monitors allow witnesses to mark an exhibit with notations. Counsel may then preserve the marked exhibit for later viewing. This is the electronic equivalent of drawing on a large posterboard exhibit, either as evidence presented by a witness or a demonstration by counsel. The additional advantages of electronically marking an exhibit are that counsel can preserve the markings for later viewing and can clear the markings from the original exhibit to start each witness with a clean exhibit. The availability of this process reduces the expense of the litigants having to purchase multiple enlarged copies of the same exhibit.

Counsel may ask witnesses to mark an exhibit to show where a person was standing or a crucial event occurred. Once a witness makes the notations on the monitor, counsel or the witness may add additional notations to identify each witness associated with the respective exhibits. Finally, counsel may preserve all markings by printing a color copy of the exhibit. When the next witness is called to perform a similar function, counsel can display a clean copy of the electronic exhibit free of any markings that might influence the subsequent witness.

Annotation monitors installed in a courtroom are an additional expense;

however, counsel now can use tablet-type devices for a witness or counsel to mark an exhibit to demonstrate the location of the event or incident. The tablet-type devices used for this purpose include tablets based on the iOS (iPad), Android, and Windows operating systems. The extra expense of equipping a monitor with an annotation capability is slowly being eliminated because of tablet-type devices.

### Witness Monitor

Whether counsel is showing an electronic exhibit to a witness on a monitor at the witness stand or a tablet-type device handed to the witness, the ability to show the exhibit to a witness before the jury sees it is important for the traditional reasons. First, without showing the exhibit to the jury, the lawyer can show the electronic exhibit to a witness on the witness monitor or tablet device to elicit testimony from the witness concerning the authenticity and relevance of the exhibit for admissibility. After the exhibit is admitted into evidence, the image may then be displayed on courtroom monitors for viewing by the jury and courtroom observers. Second, a witness monitor or tablet device should have an annotation feature that allows the witness to electronically mark the displayed image. The judge or counsel should allow a witness to make practice markings



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on the electronic exhibit to gain familiarity with the touch and feel of the process, without the jury seeing the practice markings. Counsel or the judge can explain to the witness (and the jury can hear the explanation) that before any markings are displayed to the jury, the witness should get a feel for the touch and pressure that are necessary to make clear markings on the exhibit.

### Evidence Camera

After the video display system, the next most important piece of equipment in the technology-enhanced courtroom is the evidence camera. This piece of equipment is indispensable for a technology-ready courtroom. No other piece of equipment surpasses this item in its ability to encourage litigants to use technology during in-court proceedings. An evidence camera allows the instantaneous conversion of a paper document or physical exhibit to an electronic image for display on the courtroom's monitors, with the ability to enlarge and reduce the image as needed. Simply by placing the evidence under the camera lens, a real-time and enlarged image of the evidence is instantaneously displayed. Using an evidence camera to enlarge a four-inch-by-six-inch photograph or the face of a wristwatch for all to clearly see on the courtroom monitors is impressive. During my demonstrations of a technology-enhanced courtroom, one example that often surprises the audience is to see the back of a pre-2009 one-cent coin enlarged to show the engraved Lincoln Memorial silhouette of President Lincoln's statue between the two center columns of the memorial. The evidence camera is the most significant and essential piece of equipment of a technology-enhanced courtroom. Even counsel that are not inclined to use technology during their presentations have fewer problems using an evidence camera in the courtroom than other available forms of technology.

### Laptop Connections and Other Digital Input Locations

Because of the popularity of laptop computers as an instrument to present digital

images and sound, laptop inputs to the courtroom's audio and video display systems are a necessity for the technology-enabled courtroom. Among the universe of courtrooms, there are several traditional locations for audio and video inputs, including the litigant's table, the speaker's lectern, the courtroom clerk's station, and the judge's location. The redundancy of this configuration permits the opposing sides to each have their individual input location and a spare input location, if needed, and a location for the judge's input, especially if the judge makes use of the courtroom technology during voir dire and jury instructions.<sup>2</sup>

A video or audio input location may become disabled for many reasons, including loose connections or snapped cables. Installing separate inputs for the opposing parties and at the speaker's lectern provides the advantage of an alternative site for audio and video input. The ability to also input sound and video from both the judge's location and the courtroom clerk's station provides psychological comfort that an input failure at any one location is not fatal to the presentation.

A courtroom's video and sound input connections will encounter numerous types of devices, including PC-type devices, iPads, Androids, and Macintosh devices. Most equipped courtrooms have standard VGA connections for images and 3.5 mm connections for audio; however, courtrooms should be prepared for input from an HDMI (high-definition multimedia interface) connection. There are input adapters for each type of device, which should be standard equipment in the courtroom. Unfortunately, some litigants do not consider the possibility that the input stations for the courtroom's audio and video display systems do not physically match the output connection for their device.

### Combo VCR/CD/DVD Player

For years, the combo VCR/CD/DVD player was necessary equipment for a technology-ready courtroom; however, the increasing use of laptop computers and tablet devices has diminished the need for such players. Although exhibits occasionally surface that

need legacy equipment, including cassette, VHS, and maybe even Betamax tapes, litigants often store their audio and video exhibits on their laptop computers or tablet devices, or a thumb drive or other storage device. The flexibility of laptop computers and tablet devices has rendered nearly obsolete the need for a combo VCR/CD/DVD player as standard equipment in the technology-enabled courtroom. However, because the cost is nominal, it is worthwhile to have this legacy equipment available even if rarely needed.

### Courtroom Printing and Electronic Storage of Exhibits

A color printer remains a staple of the technology-ready courtroom for printing exhibits on which witnesses have made electronic markings. Besides printing paper copies of images and markings and other notations for review by the judge or jury during deliberations, paper copies often are needed to satisfy the primeval urge for paper backups just in case the electronic Xs and Os disappear into the ether.

There is an alternative to printing paper copies of marked exhibits, i.e., preserving the digital exhibits and markings and providing the jury with a laptop computer, kiosk, or other device to call up and display each exhibit as needed. The arguments for this alternative are (1) the resolution and clarity of the electronic image are superior to the printed copy, (2) the delay (10 to 15 seconds, or more—an interminable wait in the courtroom for the electronically marked exhibit to appear as a printed copy) is obviated, and (3) electronically preserved exhibits are immediately available for input into the court's electronic records system.

### Integrated Controller

The courtroom's control of the source of images and sound into the courtroom's video and audio system is handled through a controller, an electronic device that is integrated with the courtroom system. Most often, the controller is a touch screen with which the judge or courtroom clerk can choose the source of the image to be displayed and sound heard on the courtroom's video display and sound systems. While it is possible to allow counsel

to determine when a video is displayed or audio is played, it is normally best to leave “traffic cop” control in the hands of the judge and courtroom clerk. Whether this function is performed by the judge or courtroom clerk is likely to be influenced by the tradition and preference of the judge. If the judge does not have an interest in performing this function, the courtroom clerk must have the training to perform the job. In my case, the courtroom clerk and I have duplicate controls that allow either of us to choose the source of the video or audio to be played on the courtroom’s system. The standard configuration allows the controller to direct the image and sound from any source to selected monitors or a single monitor. In addition, the controller must have a “kill switch” that allows, in case Murphy’s law is invoked, instantaneous termination of any image or sound. The “kill switch” in my courtroom is labeled euphemistically with the much milder term “clear system.”

When the advanced features of an integrated controller system are accessed, the controller can simultaneously display images from separate sources, e.g., showing an image from the evidence camera on monitor no. 1, a video from the prosecutor’s laptop connection on monitor no. 2, the image of a still photograph from the defense attorney’s laptop connection on monitor no. 3, a PowerPoint limiting jury instruction from the judge’s computer on monitor no. 4, and so on. However, the knowledge of the system and mental dexterity that the judge or courtroom clerk must exercise to effectively and efficiently operate such a system might be a bit too much to ask under normal circumstances. The complexities of such a system may either result in the advanced features being rarely used or discourage use of the

courtroom’s technology capabilities. The simplified configuration discussed earlier is more practical until the judges’ and lawyers’ use of basic courtroom technology becomes more the rule than the exception.

### Wireless Installation

Once upon a time, installation of the controller system for display of images from various courtroom sources required removing and raising the existing floor to allow installation of wires and cables to connect the image and sound sources (counsel’s laptop, the evidence camera, etc.) with the controller system. That effort in my assigned courtroom resulted in a floor in the well of the court three inches higher than the audience section of the courtroom. This resulted in an inclined pathway from the audience section of the courtroom to the well of the court. As you might have expected, numerous lawyers and litigants stumbled when they did not notice the incline as they entered the well. Now, with vast improvements in wireless technology, retrofitting a courtroom to accommodate an integrated system that controls the connection between sources and the courtroom’s video display and audio system does not require extensive removal and raising of the courtroom floor to accommodate wire and fiberoptic cables.

### Remote Witness Testimony and Video Conferences

A video camera and broadband availability are essential for transmission and receipt of remote witness testimony or remote participation by one or more lawyers or the judge, or to conduct video conferences. Although remote witness testimony has occurred at an increasing rate over the last several years, even today its use is occasional in

civil trials and much less frequent in criminal trials. However, video conferencing occurs frequently in criminal arraignments and presentments, in status hearings and review hearings in dependency cases, and for foreign language translators in remote locations. With the availability of numerous online web conferencing solutions, any courtroom purporting to carry the label “hi-tech” must have the ability to permit remote participation.

### Conclusion

Building a technology-enhanced courtroom is a learning experience and depends on the preferences of those in control of the installation. Although there are some proven best practices, other aspects and features are a matter of personal preference. Do not allow the prospect of indecision to kill the project. The minimum requirements of the courtroom should be the video display and audio sound systems, input connections for video and sound, and an evidence camera. With just these features, you are ready to host or present the majority of evidence offered in most proceedings. The judge and litigants can usually master the use of these features quickly. ■

### Endnotes

1. This column is adapted from previous writings by this author, namely, Herbert B. Dixon Jr., *The Evolution of a High-Technology Courtroom*, NAT’L CTR. FOR STATE COURTS FUTURE TRENDS 2011, at 28, <https://ncsc.contentdm.oclc.org/digital/collection/tech/id/769>; and Herbert B. Dixon Jr., *The Courtroom of the Future: The Bare Essentials for a Technologically Competent Courtroom*, 48 JUDGES’ J., no. 1, Winter 2009.

2. For a description of this author’s use of a PowerPoint presentation during jury instructions, see Herbert B. Dixon Jr., *PowerPoint Jury Instructions*, 50 JUDGES’ J., no. 1, Winter 2011.