TECHNOLOGY IN THE JUDICIARY: ONE JUDGE'S EXPERIENCE

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ABSTRACT

Technology has transformed federal and state courts over the past 30 years. This Article discusses that transformation from the viewpoint of a judge who has been on the bench for 33 years—first in Idaho state court and later in Idaho federal district court. The Article documents how the District of Idaho went from 0 to 60 (and beyond)—with accompanying productivity spikes—all by embracing technology. It concludes by briefly considering what the future might hold and warns that while technology will take us far, it will perhaps always leave us just short of where we want to be. In the final analysis, the "last mile" of judicial analysis requires wisdom, a peculiarly human trait.

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I. INTRODUCTION

On December 31, 1987, I took my oath of office to serve as a state court trial judge in southeastern Idaho. Over the next 32 years, as I served on both the state and federal trial bench, I witnessed a remarkable transformation in the judiciary. The change was not in our goals of preserving the rule of law, protecting the civil rights of our citizens, safeguarding the rights of the

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accused in criminal cases, or efficiently resolving civil disputes. Rather, it was a change in the tools we used to achieve those goals. This Article is written to explore how technology in the federal courts has evolved, reflect on my own experience in using technology, and briefly consider what the future might hold.

II. THE STATE JUDICIARY IN 1987

When I began the practice of law in 1977, I was blessed with an early introduction to the use of technology. My first law job was with a large firm in Denver, Colorado which was an early adopter of computer-assisted legal research and the use of word processors. When I returned to my home state of Idaho in 1979 to continue my legal career, I was initially hired by Don Burnett—later the dean at the University of Louisville and the University of Idaho's schools of law—who shared my interest in the use of technology. We quickly transitioned from IBM typewriters to early forms of word processors. In short order, we were developing forms and work habits that allowed us to do much of our own work in preparing legal documents. They were exciting times as we began exploring how technology might revolutionize legal services.

After practicing law for 10 years, I was appointed in 1987 to serve as a trial court judge in eastern Idaho. The state judiciary at that time was largely untouched by technology. Research was done exclusively in the county law library, decisions were written longhand or dictated to a secretary, and correspondence was prepared in the same manner and sent using the U.S. Postal Service. There was no systematic way of managing cases and decisions.

Jury trials were conducted as they had been for decades. Exhibits were presented with a single hard copy which was passed around the jury box during examination of the witnesses. Juries were often sent out of the courtroom while the judge and the attorneys resolved evidentiary disputes. Depositions were presented to the jury by a reenactment of the deposition with a "reader" playing the role of the deponent and trial counsel reading the questions that had been asked. Court reporters dutifully created a trial record on long strips of steno paper containing hieroglyphics which they magically turned into a transcript some weeks later.

As I took the bench, I attempted to bring into the court some of the technology which I had used in practice. I persuaded the court to provide me with a word processor so my law clerk and I could prepare our work without secretarial help. Occasionally, and upon a showing of real need, I was

permitted to use Westlaw and Lexis for legal research. Rudimentary email systems were implemented. Change was underway, but the progress was glacial.

III. THE FEDERAL JUDICIARY IN 1995

On August 16, 1995, I was sworn in as a U.S. District Judge for the District of Idaho. The technology needs of my new position could not have been more different from that of my old. From being one of four judges tasked with handling state court proceedings in a small corner of Idaho, I went to the federal court with only two district judges, whose jurisdiction extended over the entire state—a state with 83,000 square miles and a 1995 population of nearly 1.2 million (now approaching 1.8 million).[1] Because of Idaho's unique shape and geography, it is necessary to maintain three courthouses—in Boise, Pocatello, and Coeur d'Alene.[2] From the main courthouse in Boise, it is 240 miles to Pocatello and 400 miles to Coeur d'Alene. And there are no direct flights between those locations.[3]

Additionally, the caseload was dramatically greater than what I experienced in the Idaho state courts. Not only were there more cases, but they were far more complex—both legally and factually. And, while the civil caseload remained roughly the same over the next 25 years, the criminal caseload increased by 350 percent, with no increase in judicial officers.

Obviously, the challenges of our court required creativity if we were to discharge our duty of achieving the "just, speedy and inexpensive determination of every action and proceeding."[4] By and large, that efficiency was achieved through the extensive use of technology—and the move to a truly paperless court. Fortunately, over those 25 years, the federal judiciary has substantially improved the technological tools available to federal judges throughout the United States. Exploiting those tools has been the key to our

1. *About Idaho*, VISIT IDAHO, https://visitidaho.org/about-idaho/ [https://perma.cc/V4JC-944R]; *Population Estimates for Counties by Race and Hispanic Origin: July 1, 1995*, U.S. CENSUS BUREAU (Aug. 30, 2000), https://www2.census.gov/programs-surveys/popest/tables/1990-2000/counties/asrh/crhid95.txt [https://perma.cc/9LKN-2ZRN]; *QuickFacts: Idaho*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/ID [https://perma.cc/2Y5W-B3ML].

2. 28 U.S.C. § 92 (1970). The District of Idaho is also statutorily required to hold court in Moscow, Idaho but does so only sporadically. *Id.*

3. To give some sense of the distances involved, it can be compared to a court which must conduct regular proceedings in Boston, Pittsburgh, and Washington, D.C., but with no direct flights between those locations.

4. FED. R. CIV. P. 1.

success in addressing the many challenges we face as a judiciary with inadequate staffing, unique geographical challenges, and a burgeoning caseload.

IV. TAKING THE COURTS INTO THE TWENTY-FIRST CENTURY

A. *Electronic Case Files*

The handling of case files in a district with a challenging geography, like Idaho, poses real difficulties. All case files were maintained at the main courthouse in Boise and had to be physically reviewed there. Boxes of files were shipped to the divisional offices in Pocatello and Coeur d'Alene each week to support court proceedings being conducted there. This resulted in substantial expense for the court but, more importantly, made the files inaccessible to judges, law clerks, and staff.

With some real foresight, our Clerk of Court, Cam Burke, concluded the only way to resolve the problem was to scan all filed documents and make them electronically accessible to judges, court staff, and practicing attorneys on the court's website. The process, begun in 1992, was largely completed by 1997.[5] This did not solve the challenges and cost of moving boxes of court files to divisional offices on a weekly basis, but it did resolve the accessibility challenge.

At the same time, the Administrative Office of the United States Courts (AO), at the direction of the Judicial Conference of the United States (JCUS), began the ambitious process of developing an automation system for the federal judiciary, which would include integrated case management, electronic court files, and the ability to file court documents using the Internet.[6] The concept for the project began with the efforts of local courts, which were managing massive class action litigation and handling large corporate bankruptcies.[7] The project became known as the Case Management/Electronic Case Files system (CM/ECF).[8] CM/ECF was initially deployed to nine prototype/pilot courts between November 1996

5. *See* Dist. of Idaho Gen. Order No. 140 (Sept. 12, 1997).

6. *See* J. Michael Greenwood & Gary Bockweg, *Insights to Building a Successful E-Filing Case Management Service: U.S. Federal Court Experience*, INT'L J. CT. ADMIN., June 2012, at 1, 2.

7. *See id.*

8. *See id.* at 1.

and March 1998.[9] CM/ECF was rolled out to the district and bankruptcy courts beginning in 2001, and the appellate courts in 2006.[10] By 2012, all federal courts (bankruptcy, district, and appellate) were using CM/ECF.[11] The courts are currently rolling out the second generation of CM/ECF, which it has denominated as NextGen.[12]

CM/ECF was a game changer for judges seeking to find new technological tools to better handle a burgeoning caseload and allow them to work remotely from their homes, divisional offices, and hotels.[13] Through a Virtual Private Network (VPN) connection to the federal courts' Data Communication Network (DCN), judges could access their court files from any location with Internet access.

While CM/ECF did not include a calendaring function, this shortcoming was soon addressed by local courts which developed calendaring systems integrated with CM/ECF.[14] While there are four or five such systems in use among the bankruptcy courts, the district courts largely adopted a product developed by the Southern District of Texas: Chambers Electronic Organizer (CEO).[15] Because each calendar entry in CEO is linked to the underlying CM/ECF case file, the judge and the judge's staff are able—with the click of a mouse—to access all of their critical case documents as they review each day's calendared proceedings.

CM/ECF provided other opportunities for efficiency. Briefs and affidavits were typically filed on CM/ECF in a text-searchable format.[16] It became immediately apparent there were real advantages to reviewing documents in their native electronic format rather than printing a copy and

9. *See id.* at 2.

10. *See id.*

11. Because of the success of its program of scanning all filed documents and making them available to the court, the public, and the bar on its website, the District of Idaho chose not to be an early adopter of CM/ECF and did not go live until January 1, 2005. This decision was due, in large part, to the charge that was imposed for access to the CM/ECF files and data. *See id.* Electronic access to Idaho's scanned court files had always been made available to attorneys and the public at no charge.

12. *See NextGen CM/ECF*, U.S. DIST. CT. CENT. DIST. OF CAL., https://www.cacd.uscourts.gov/e-filing/nextgen-cmecf [https://perma.cc/A9XU-S8RG].

13. *See* Greenwood & Bockweg, *supra* note 6, at 2.

14. *See id.* at 3.

15. *Grants Fuel Local IT Initiatives*, THE THIRD BRANCH, (Newsl. Fed. Cts.), Nov. 2004, at 5.

16. *See* Greenwood & Bockweg, *supra* note 6, at 4.

reviewing it manually. These features made it clear that it was not only possible but perhaps preferable for a judge to operate a paperless chambers.

B. *Developing Paperless Chambers*

The paperless chambers required different assumptions about how work would be processed and completed. To take full advantage of technology in chambers, there were certain critical elements: (1) the right hardware and software; (2) a well-defined work flow process; (3) collaboration tools; (4) the ability to access the DCN from any location; (5) a committed chambers staff; and (6) a supportive IT staff.[17]

At the time of my initial appointment in 1995, every judge and staff attorney in our district was provided with a desktop computer. I was actually provided with two desktop computers since I maintained two chambers—one in Pocatello and one in Boise. A laptop could be checked out from the clerk's office by the judge or law clerk but only if the request could be justified. This arrangement was clearly not going to allow me to go paperless. To achieve that goal, I needed to have a device or variety of devices that would allow me to access my electronic documents from any location—in chambers, in the courtroom, at home, in hotels, and on airplanes. With a cooperative clerk of court and IT manager, desktop computers were installed in my two courtrooms, and I was given a laptop computer for use while traveling.

This arrangement, while allowing me to make my chambers paperless, was very expensive for our court. Not only did it require the purchase of five separate devices but it required that each device be configured for me, receive routine updates and security patches, and be cyclically replaced by the IT Staff. After a few months experience, I found myself growing frustrated with the minor aggravations of switching my work from device to device. Collaborating with our IT staff, we developed the idea of using a single laptop in all locations, which would be connected through a docking station to multiple monitors in chambers but could also be connected to the DCN while on the bench. This not only saved the clerk's office the cost of buying, and the staff time of maintaining, four additional computers but it also reduced my aggravation as I was able to seamlessly transition from chambers to the bench. I could prepare for a hearing or trial in chambers, and then simply close my laptop, remove it from the docking station, take the bench, dock my laptop again, and pick up right where I left off in chambers. And, at the end of the day I could go to my home or my hotel

17. *See id.* at 6.

room, connect to the Internet, and, using a VPN to safely connect to the DCN, pick up again from where I left my work at the end of the day. The efficiency was remarkable, and the result very satisfying. Over time, of course, the devices have changed. In fact, the processing power of tablets has improved to the point that my "computer" is really a Microsoft Surface tablet. But, the concept of using a single device to work at all locations has been a critical element of being able to work effectively in a paperless environment.

Developing a workflow process is also critical to successfully going paperless. My process has changed over time, but the basic structure remains the same. In preparation for hearings or trials, the law clerk prepares an electronic briefing notebook, rather than the 3-ring briefing book which had been the norm for decades. The electronic notebook is an e-folder, containing anything which might be helpful in preparing for a trial or hearing. The backbone of the notebook, of course, is all of the briefing combined into a single PDF document, which aids in searching the briefs to see how and whether the parties dealt with a particular case or legal theory. But, depending on the needs of the case, it might also include: (1) affidavits or deposition excerpts; (2) PDF copies of relevant appellate decisions obtained from Westlaw or Lexis; (3) copies of police dash cam videos or wiretap recordings; and (4) a proposed decision or bench memo. The electronic notebook is then deposited in an "Upcoming Hearings" folder where I can access it in preparing for a hearing. After the hearing, the law clerk resumes control of the notebook until a draft final decision has been prepared. At that time, the electronic notebook is placed in a folder appropriately named "Ready for Judge." There, I review and edit the proposed decision. Once it is finalized, I affix my electronic signature and move the notebook to a "Signed Decisions" folder from which the law clerk takes the decision and dockets it.

Initially, the work-flow process described above was achieved by using folders on a chambers shared drive maintained by the district court. However, this precluded working on documents when the Internet was unavailable and I could not access the DCN. My chambers explored various other options and began using DropBox, a collaboration tool which keeps a version of any document on your computer, and then synchronizes your work with a version maintained in the cloud whenever you access the Internet. As a commercial file sharing program maintained by a private vendor, it was frowned upon by the AO. I was ultimately asked to discontinue using it. The AO tried to develop some alternatives, but none of them provided the version control and ease of access that I enjoyed with

DropBox. Finally, in 2017, the federal courts began utilizing a public cloud solution for many of its computing needs and made the Microsoft suite of products available as part of that initiative. Since that time, I have been able to use OneDrive and SharePoint to work collaboratively with my staff in drafting decisions and managing our workflow.

Given my incessant travel between courts, accessing the Internet from any location is, of course, key to my working efficiently. Using a VPN to access the DCN has provided me with an effective way to access court files and work from virtually anywhere in the world. On occasion, I have had the opportunity to travel on court business to other countries, and I spend a fair amount of my free time vacationing to distant parts of the globe. However, I have always been able to maintain contact with my chambers so I can address emergencies and, if necessary, work on decisions. There are obvious security issues which need to be addressed and are beyond the scope of this Article. And, there are certain countries where no one should attempt to conduct business on the Internet because it is inherently unsafe due to the activities of freelance and government-sponsored hacking. But, in my experience, committing to a paperless court enables judges to work as effectively on the road as they do in chambers.

C. *Electronic Case Management*

Another value of CM/ECF is the availability of data which allows judges to analyze the aging of cases and motions and monitor the work of their chambers. One of my guiding principles has always been, "If you can't measure it, you can't improve it." The data collected by CM/ECF and other software programs used by the courts has enabled me to develop a successful management system that uses data to improve the functioning of my chambers.

When I was first appointed to the federal bench, I was shocked at the lack of any case management systems for district judges. The only reports generated on a routine basis were those mandated by the Civil Justice Reform Act (CJRA).[18] The CJRA only requires that the AO generate a report showing, for each district and magistrate judge, all motions pending more than six months and all civil cases pending more than three years.[19]

18. 28 U.S.C. § 476 (1990).

19. *Id.* The statute also requires that the report show all bench trials submitted more than six months prior, and all bankruptcy and Social Security appeals pending

And because the data for the report is only generated once every 6 months, a motion could be under advisement for up to 12 months and a case pending for up to three and one-half years before appearing on any report.[20] Thus, the CJRA report only documents a lack of case management, rather than encouraging successful case management. Nevertheless, since it is the only case management report in the federal courts, many judges have defaulted to the CJRA standard as their case management standard. This has resulted in federal judges lagging substantially behind their state counterparts in the timely resolution of their motions and cases. As a product of a state court system that required far more of its judges, I felt that I could do better.

Since the vast majority of cases in the federal system are resolved by motion or by settlement, my primary focus has been on having clear standards for resolving motions in a timely manner.[21] After some trial and error, I settled on an aspirational goal of having all pending motions resolved within 60 days after they were at issue, and ready for decision.

With the assistance of our IT staff and utilizing data generated by CM/ECF, we developed a report which divided our pending motions into six categories based upon how many days the motion has been pending: 0–30, 31–60, 61–90, 91–120, 121–180 and 180+. The report is available online for review at any time by myself and any law clerk and records the status of all motions in real time.

However, I did not want a report which, like the CJRA report, documents my failures. The goal was to use the report to improve case management—to change the way we worked and managed our cases. I stumbled upon an article in *Wired* magazine which described how what is called a feedback loop could be profoundly effective in changing behavior.[22] As the author described it: "The basic premise is simple. Provide people with

more than six months. *Id.* However, the pending motions and aging cases are the primary concern of most trial judges. *See id.*

20. *See id.*

21. *See* John Gramlich, *Only 2% of Federal Criminal Defendants Go to Trial, and Most Who Do Are Found Guilty*, PEW RES. CTR. (June 11, 2019), https://www.pewresearch.org/fact-tank/2019/06/11/only-2-of-federal-criminal-defendants-go-to-trial-and-most-who-do-are-found-guilty/#:~:text=Nearly%2080%2C000%20people%20were%20defendants%20in%20federal%20criminal,analysis%20of%20data%20collected%20by%20the%20federal%20judiciary [https://perma.cc/X36E-PX29].

22. *See* Thomas Goetz, *Harnessing the Power of Feedback Loops*, WIRED (June 19, 2011), https://www.wired.com/2011/06/ff_feedbackloop/ [https://perma.cc/Z5ZL-M33A].

information about their actions in real time (or something close to it), then give them an opportunity to change those actions, pushing them toward better behaviors. Action, information, reaction."[23] I decided to experiment with using feedback loops to use the available data to improve the productivity of both my chambers and all of the judges in the district.[24]

To achieve a feedback loop, the report for my chambers shows which law clerk is assigned to each pending motion and is distributed to each law clerk monthly so they are forced to compare the status of their work with that of their colleagues. That simple step has had a remarkable impact. Prior to using this report, there would be a flurry of activity in March and September, when the CJRA report was due, to resolve any motions that had been pending for 12–18 months. Today, using the feedback loop generated by the report, that flurry of activity occurs each month just before the report is issued, as the law clerks work to ensure that the motions assigned to them are resolved in less than 60 days. The simple act of forcing law clerks to compare their productivity with that of their colleagues has ensured that we rarely fail to meet our aspirational goal.

I have also served as chief judge of our district for almost 20 years. During that time, I used the same idea of a feedback loop to encourage judges to abandon the CJRA report as a case management tool and to stay current in resolving their pending motions. The same report is generated monthly, without identifying case names, but showing how many motions

23. *Id.*

24. *See id.* Feedback loops are used in machinery, electronics, psychology, and nature. But, they employ the same basic concept:

> A feedback loop involves four distinct stages. First comes the data: A behavior must be measured, captured, and stored. This is the evidence stage. Second, the information must be relayed to the individual, not in the raw-data form in which it was captured but in a context that makes it emotionally resonant. This is the relevance stage. But even compelling information is useless if we don't know what to make of it, so we need a third stage: consequence. The information must illuminate one or more paths ahead. And finally, the fourth stage: action. There must be a clear moment when the individual can recalibrate a behavior, make a choice, and act. Then that action is measured, and the feedback loop can run once more, every action stimulating new behaviors that inch us closer to our goals.

Id.

each judge has in the categories described above.[25] Again, this simple step of creating a feedback loop by sharing real-time data and allowing each judge to measure themselves against their colleagues has yielded real improvement in our district's case management. The clerk's office reported to me that after using this report for one year, the average time necessary to resolve a motion in the district was reduced by more than 30 percent.

D. *Conducting Trials Electronically*

In some respects, technology has affected the jury trial more than any other aspect of the judicial system. It should be obvious to even the casual observer that a jury trial is very much a staged production. Technology has had the same transformative effect on lawyers, judges, and jurors as it has had in the entertainment industry.

The impact starts as early as the summoning and selecting of jurors. While we are still required to summon jurors by mail, most of their interaction with the courts is done electronically from that point forward. The jurors are summoned and assigned seats in a completely random fashion by the court's computers. In the District of Idaho, counsel are provided with the juror lists one week before trial. This has led to the use of social media by counsel to obtain information about potential jurors. The court has responded, in turn, by adopting a local rule which controls the manner in which such information can be obtained, as well as how it can be used during jury selection.[26] Many attorneys use IOS or Windows-based apps to assist them in organizing information about each potential juror.

After the jury is selected, the trial begins. Counsel, using the court's evidence presentation systems, weave trial exhibits, videos, timelines, and evidence summaries into their opening statements. Then, all evidence is presented to the jury electronically by way of a high-quality projector that displays a remarkably clear image of the exhibits onto a large screen behind the witness.[27] Counsel and the witness can use touch screens to annotate the

25. *See supra* Part IV.C ("With the assistance of our IT staff and utilizing data generated by CM/ECF, we developed a report which divided our pending motions into six categories based upon how many days the motion has been pending: 0–30, 31–60, 61–90, 91–120, 121–180 and 180+.").

26. *See* IDAHO LOC. CIV. R. 47.2.

27. Many courts prefer to use smaller monitors built into the jury box. However, in designing our courtrooms, we retained audio-visual experts to provide us with their expertise. Their recommendation was to use a large projected image behind the witness. This was based upon the studies showing that jurors remained better focused on the

exhibits and highlight text for the jury. To preserve the record of such annotations, a PDF can be created of the exhibit exactly as it was shown to the jury.

Evidence presentation systems are not used for their entertainment value.[28] They have become a critical part of the trial process.[29] They make the presentation of evidence more understandable to the jury by showing them, in real time, the exhibit which the witness is discussing and allowing the witness to highlight portions of the exhibit for the jury's benefit.[30]

It is also an immense timesaver.[31] Prior to using such systems, trial exhibits would be handed to the witness, identified, offered into evidence, and admitted.[32] Then counsel would show the exhibit to the jurors in one of three ways: (1) having the exhibit handed to the jury so that each could examine it; (2) showing the exhibit to the jury on large poster boards; or (3) handing each of the jurors a copy of the exhibit so they could put it in the juror notebook provided to them by the court.[33] Each of these options delayed the trial, interrupted the smooth flow of counsel's presentation, and made it difficult for the juror to track the witness's discussion of the exhibit.[34] When the evidence is presented electronically, the witness, counsel, and the court are first shown the exhibit on their monitors. After a foundation is laid and its relevance established, the exhibit is offered. Then, if the exhibit is

witness's testimony if they were not alternating between looking at the witness and a small monitor placed directly in front of the juror.

28. *See Courtroom Technology*, U.S. DIST. CT. S. IOWA, https://www.iasd.uscourts.gov/courtroom-technology [https://perma.cc/CDK3-JAU4].

29. *See id.*

30. *Id.*

31. Deborah D. Kuchler & Leslie C. O'Toole, *How Technological Advances in the Courtroom Are Changing the Way We Litigate*, FED'N DEF. & CORP. COUNSEL Q., Winter 2008, at 215, http://kuchlerpolk.com/wp-content/uploads/2014/04/how_technological_advances_in_the_courtroom_are_changingddk.pdf [https://perma.cc/GA5V-B889].

32. *Introducing Exhibits*, BENCHMARK INST., http://www.benchmarkinstitute.org/t_by_t/exhibits/introducing.htm [https://perma.cc/SV28-UXAW].

33. *See* F. Dennis Saylor IV & Daniel I. Small, *Showing Exhibits to the Jury*, MASS. LAW. WKLY. (June 18, 2018), https://www.hklaw.com/files/Uploads/Documents/Articles/DanSmall/DanSmallShowingExhibitstotheJury.pdf [https://perma.cc/4WM9-YC23].

34. *See id.*

admitted, the jury's projection screen is turned on so they can view the exhibit as the witness testifies about its significance.[35]

The benefits of trial presentation systems are obvious. So much so, that I prohibit counsel from using paper copies of exhibits with the jury unless it is approved by me in advance of trial. This is because I am firmly convinced that presenting evidence to jurors electronically helps them better understand the evidence. This, in turn, leads to better decisionmaking by the jury. And, importantly for a judge in a very busy court, evidence presentation systems substantially reduce the time it takes to try a case.[36]

During the course of the trial, we are also able to avoid sending the jury out of the courtroom while we take up evidentiary disputes. Our courts are equipped with sidebar microphones, which are connected to a headset used by the court reporter as he or she makes a record of the argument and decision. When the sidebar microphone is turned on, a device is activated that causes our audio system to produce white noise over the jury box, allowing counsel and the judge to conduct the sidebar conference with confidence that the jury cannot overhear their discussions. I never send jurors out of the courtroom, and this allows our trials to proceed more smoothly and efficiently.

In civil trials, it is not unusual to have witnesses testify from remote locations using videoconferencing equipment.[37] This is specifically permitted by Rule 43, which provides, "For good cause in compelling circumstances and with appropriate safeguards, the court may permit testimony in open court by contemporaneous transmission from a different location."[38] Because of the challenges of traveling to and within the District of Idaho, it is quite common to have one or more of the witnesses in a particular trial testify from a remote location. That same option is not available in criminal trials because of criminal defendants' Sixth Amendment right to confront their accuser.[39] However, one must wonder whether even this view will need

35. *See* Kuchler & O'Toole, *supra* note 31, at 207–08.

36. *Id.* at 215.

37. *See* Adam Bloomberg, *How Do I Present My Witness by Video Conference (aka: Skype)?*, LITIG. INSIGHTS (Oct. 21, 2016), https://www.litigationinsights.com/ present-witness-courtroom-video-conference-skype/ [https://perma.cc/WQ6Q-WNKZ].

38. FED. R. CIV. P. 43.

39. U.S. CONST. amend. VI. As explained in *El-Hadad v. United Arab Emirates*, 496 F.3d 658, 669 (D.C. Cir. 2007), "Rule 43 permits video testimony, and its criminal equivalent (Federal Rule of Criminal Procedure 26) doesn't, precisely because the Supreme Court found the criminal context too sensitive for the same rule. *See Order of*

to be revisited, given the judiciary's recent challenge in trying to balance a defendant's constitutional rights with the problems created by a global pandemic.

Another critical development is the use of real-time court reporting. By having a transcript before me as evidentiary disputes arise, I am able to check the testimony against my memory and ensure my rulings are based upon precisely what question was asked and what answer was given.

Even when the jurors retire to the jury room to begin their deliberations, technology plays a critical role. For at least 10 years, I have required that all trial exhibits be available for viewing by the jury using a monitor. This is done by requiring counsel to submit a flash drive on the last day of trial, which contains all of their admitted exhibits. The court clerk, after confirming the exhibits on the thumb drive were admitted and any court-ordered redactions have been made, then loads the exhibits onto a laptop computer which contains no other programs and cannot be connected to the Internet. When the jury begins its deliberations, the computer is connected to a large monitor in the jury room and one or more of the jurors is instructed on how to use the equipment to view the trial exhibits. This allows all of the jurors to see the same exhibit at one time, as they review and discuss the evidence during their deliberations. In this way, bringing the electronic copies of the exhibits into the jury room promotes a collaborative review of the evidence.[40]

V. CONCLUSION

Every day, when I enter the courthouse, I see many reminders of how technology has transformed the judiciary. The copier sits quietly unused in the corner and is only turned on when we need to make copies of my

the Supreme Court, 207 F.R.D. 89, 93–96 (2002) (Scalia, J.); *United States v. Yates*, 438 F.3d 1307, 1314–15 (11th Cir. 2006)."

40. This method of allowing the jury to view the evidence electronically in the jury room is fairly primitive—but effective. It should be noted that many federal courts have begun using a more sophisticated system—the Jury Evidence Recording System (JERS) developed by the Western District of North Carolina. *Jury Evidence Recording System (JERS)*, U.S. DIST. CT. DIST. CONN., http://www.ctd.uscourts.gov/jury-evidence-recording-system-jers#:~:text=Jury%20Evidence%20Recording%20System%20%28JERS%29%20The%20goal%20of,of%20advantages%20to%20court%20personnel%2C%20jurors%2C%20and%20counsel [https://perma.cc/2UTX-BSXD]. It achieves the same result but has the added benefit of being created by the courtroom clerk as the evidence is presented and includes annotations to the exhibits made by counsel or the witness during the presentation of testimony. *Id.*

instructions for each member of the jury. The law library has been reduced to a small fraction of its original size. File rooms, which once had floor to ceiling shelves containing thousands upon thousands of court files, have now been repurposed into conference rooms and work spaces. The books in my chambers collect dust as all legal research is conducted using Westlaw and Lexis. I sit at my desk and begin my day—I dock my Surface tablet into a docking station, check my email, get ready for the day's hearings by reviewing electronic briefing notebooks in my "Upcoming Hearings" folder, finalize my review of draft decisions in my "Ready for Judge" folder, and review my calendar using CEO. As I enter the courtroom, my bench looks like something from Star Trek, with monitors which allow me to control the evidence presentation system, take notes, look up cases cited by counsel, access the parties' briefs, watch the real-time transcript, and review the evidence. It is a world that I am not sure I could have even imagined when I first took my oath of office as a state court judge 32 years ago. But, it is surely a better world—one in which I am able to effectively handle a caseload that would otherwise be completely unmanageable.[41]

Looking to the future, I wonder where technology will take us over the next 32 years. Although I do not have 20/20 foresight, I am certain even more change lies ahead. In the federal judiciary, there is one major change looming right around the corner. Three years ago, the Judicial Conference approved the recommendation of the Information Technology Committee to begin utilizing a private cloud solution for much of the court's technology needs.[42] While that process is underway, it has not moved as quickly as many of the court's stakeholders would like. However, it does hold great promise of improving collaboration and efficiency in the federal judiciary.[43]

41. When I began writing this Article, the impact of the COVID-19 pandemic was just beginning to be felt in the courts. An unanticipated benefit of our aggressive adoption of technology is that it enabled our chambers to function efficiently whether everyone was in the office or teleworking from home. Our decisions were issued in a timely fashion, hearings were conducted as scheduled (albeit by a variety of videoconference platforms), and the business of the court continued. After getting through our governor's initial shutdown order, we safely resumed jury trials pursuant to a plan approved by a retained epidemiologist. We learned, in a time of great stress, that becoming a paperless chambers and enthusiastically embracing technology played a critical role in our ability to continue functioning as a court.

42. *Reports of the Proceedings of the Judicial Conference of the United States*, JUD. CONF. OF THE U.S. (Sept. 12, 2017), https://www.uscourts.gov/sites/default/files/17-sep_final_0.pdf [https://perma.cc/2S42-B5T6].

43. *See id.*

I think the most interesting, and perhaps most frightening, developments in technology may occur in areas that affect the very heart of the judiciary's work. Ten years ago, I moderated a panel of esteemed judges, law professors, attorneys, and academics at the Ninth Circuit Judicial Conference, in which we took up the question of what the legal system might look like in 25 years. Even at that point, the panelists agreed that artificial intelligence and neuroscience would be the new frontier. The panelists raised serious questions that still resonate today. How will the legal system be impacted if computers employing artificial intelligence are proven to precisely determine disputed facts and more accurately apply precedent to those facts than juries and judges? As functional Magnetic Resonance Imaging (fMRI) becomes increasingly sophisticated, will it come to be relied upon as an effective tool to determine veracity, prejudice, and intent?[44] Will judges and juries become obsolete as the public regards them as too expensive and unreliable? Obviously, this is not a desirable outcome.

For more than two centuries, the U.S. legal system has effectively promoted the rule of law, protected civil rights, and fairly resolved civil disputes. As I hope I have shown in this Article, technology has provided the judiciary with valuable tools in that endeavor. However, as those tools become increasingly sophisticated, we must be mindful that they should never be allowed to take over the very processes they were designed to support. We must be wary of unwittingly arriving at a point where we are "drowning in information, while starving for wisdom," with "Stone Age emotions, medieval institutions, and godlike technology."[45] To avoid that condition, we must remain ever vigilant and aware of the value, limits, and danger of technology. To borrow from Nobel laureate Bob Dylan:

> If your time to you is worth saving
>
> Then you better start swimmin' or you'll sink like a stone
>
> For the times they are a-changin'.[46]

44. *Illuminating Lies with Brain Scan Outshines Polygraph Test*, SCIENCEDAILY (Nov. 3, 2016), https://www.sciencedaily.com/releases/2016/11/161103141437.htm [https://perma.cc/9FST-TC9R] ("fMRI spots more lies in first controlled comparison of the two technologies").

45. EDWARD O. WILSON, CONSILIENCE: THE UNITY OF KNOWLEDGE 267 (New York, Knopf., ed. 1998); EDWARD O. WILSON, THE SOCIAL CONQUEST OF EARTH 7 (Liveright Publishing Corp., ed., 2012).

46. BOB DYLAN, THE TIMES THEY ARE A-CHANGIN' (Columbia Records 1964).