



Making the Record Utilizing Digital Electronic Recording

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Executive Summary

Digital recording can be an effective means of capturing, preserving, and producing the court record. Effectiveness requires court administrators and judicial leadership to establish and manage a comprehensive program that ensures that all persons responsible for setting up, operating and monitoring the recording equipment and that the Judge, attorneys, and all courtroom participants understand and meet their responsibilities to make the trial court record. It requires the adoption of best courtroom practices and the use of technology standards that enable the recording equipment to capture the record, and it requires the court to manage the production and distribution of the transcript.

This paper covers in some detail the governance and management structures needed to provide oversight of the program, recommended courtroom procedures and best practices, recommendations on managing the production of transcripts, and recommendations and minimum standards for digital recording systems, software, and equipment.

While all of these recommendations and standards are important, a digital recording program must include at a minimum:

- **Governance and Oversight**
 - Court leaders must make it clear that the court owns the record and must be able to access the record at all times
 - The courtroom monitor¹ must have:
 - A job description with clear responsibilities and performance expectations
 - A comprehensive training program
 - It should be clear that the employee or contract courtroom monitor must comply with all statutes and court rules and that the courtroom monitor is subject to the court system's code of conduct for court employees.

- **Courtroom Procedures and Best Practices**
 - Courtroom signage must notify participants when the proceedings are being recorded and must inform participants of steps to take to enable their words to be captured.
 - Judges should state each case by name and number each time a case is called. The Judge's opening colloquy must inform participants of their responsibilities to

¹ In some states that have implemented digital recording, the monitor is a judicial assistant or other member of the judicial support team and is accountable to the Presiding Judge for performance. In other states, the monitor is a member of the clerk's office staff and is responsible to the clerk for performance. Job titles may include digital court recorder, digital recording monitor, digital court reporter, reporter, or courtroom monitor. For purposes of this paper, the monitor is referred to as the **courtroom monitor**.

speaking during courtroom proceedings so that their words can be captured in the record.

- Microphones and cameras must be placed in the courtroom to enable the capture of each speaker's words.
- The courtroom monitor's responsibilities must be clear and must include the responsibility to:
 - Test the software and equipment
 - Monitor the recordings to ensure that the speakers' words are being captured into the recording system
 - Take log notes during the proceedings that enable playback and transcription
 - Assist the Judge to conduct court proceedings while making and preserving the record

- **Transcription and Distribution of the Record**

- Court leaders must:
 - Make clear who can access recordings and how to access them
 - Create a transcript management system that enables persons to obtain an accurate transcript of the proceedings in a timely manner

- **Equipment and Technology Standards**

- The system must contain a minimum of four audio recording channels.
- The courtroom must be equipped with:
 - An audio/video processor
 - Professional grade microphones with momentary mute pause switches set up according to the courtroom workflow at where participants may speak
 - Stereo, noise cancelling headphones with a uniform frequency response.
 - Cameras (only if video is being captured)
 - A personal computer with a monitor for recording and monitoring/controlling the software
- The recording system must:
 - Be able to embed time coding in the recording
 - Enable the courtroom monitor:
 - To take notes and identify speakers
 - To conduct field searches of log entries for playback
 - To isolate audio channels for the playback of recordings while simultaneously recording
 - Contain a visual indicator viewable by all courtroom participants that the audio is being successfully recorded
 - Protect against recording over previously recorded proceedings

- Enable sealing of the record both during and after the proceeding
 - Automatically and securely back up recordings and store them both locally and on a network shared server
 - Enable proceedings conducted in the Judge's chambers to be captured into the record
 - Provide the ability for the courtroom monitor to prevent amplification of bench conferences while emitting a white noise or an equivalent masking sound through the courtroom speakers to prevent jurors from overhearing the bench conference
- The transcript system must allow for field searches and a key word index.

I. Background and Introduction

A. The Conference of State Court Administrators Policy Paper

In December, 2009, the Conference of State Court Administrators (COSCA)² adopted the Policy Paper: “Digital Recording: Changing Times for Making the Record.”³ In its paper, the Conference identified stenographic reporting as the predominant method of making the verbatim record in the nation’s courts.

While stating that the “current methods of making the record have served the courts well,” the policy paper identified a number of challenges posed by stenographic reporting in creating, producing, accessing, and preserving the record while describing opportunities that digital recording offers as an alternative to the traditional, predominant method.

COSCA determined that digital recording:

- Enhances accuracy and completeness of the record by preserving language translations⁴
- Is a cost-effective means to obtain the record⁵
- Creates an opportunity to establish, whether by statute or court rule, that all records of judicial proceedings belong to the courts⁶
- Allows a court to integrate the recording system with other digital applications, including case management and calendaring systems⁷

² The Conference of State Court Administrators (COSCA), established in 1955, is dedicated to the improvement of state court systems. Its membership consists of the state court administrator or equivalent official in each of the fifty states, the District of Columbia, Puerto Rico, American Samoa, Guam, Northern Mariana Islands, and the Virgin Islands. The mission of the Conference of State Court Administrators is to provide a national forum to assist state court administrators in the development of a more just, effective, and efficient system of justice, by:

- Identifying and studying issues and, when appropriate, developing policies, principles, and standards relating to the administration of judicial systems.
- Providing an effective network for the exchange of information, ideas, and methods to improve state courts.
- Facilitating cooperation, consultation, and exchange of information by and among organizations directly concerned with court administration.
- Assisting in the formulation and implementation of national issues that affect state courts.
- Establishing and maintaining an organization that is open, inclusive, participatory, dynamic, and responsive.
- Offering educational opportunities.

³ <http://cosca.ncsc.dni.us/WhitePapers/DigitalRecording-Jan-2010.pdf>

⁴ Ibid, page 5.

⁵ Ibid, page 6.

⁶ Ibid, page 10.

⁷ Ibid, page 10.

“It is critical that any alternate method of making the record embody the fundamentals for its creation, production, and preservation: effectiveness, reliability, accuracy and timeliness. Digital recording meets this goal.”⁸

The reliability of digital recording, however, requires safeguards that the system is functioning properly. Reliability depends on the quality of the equipment and on security policies governing use of the equipment.⁹ It also requires new methods of securely storing, archiving, and retrieving recordings of proceedings and, as needed, of preparing transcripts of proceedings.

COSCA acknowledged that any transition to digital recording will require a change from longstanding traditions.

“The physical presence of a court reporter in a courtroom has been a mainstay of the traditional system.”¹⁰

This change shifts responsibility for the record from the stenographic court reporter to the Judge and staff. It means redefined responsibilities for courtroom staff not only to make the record, but to perform courtroom duties and judicial assistance often previously performed by the stenographic reporter - including swearing in witnesses and marking and preserving exhibits. It means redefining courtroom responsibilities of Judges to make sure that all participants speak clearly into courtroom microphones. It means new models of staffing, training, and supervising persons who operate and monitor the courtroom proceedings.¹¹

“The shift to digital recording in courtrooms can cause anxiety among judges, court reporters, staff, and attorneys. As with any significant cultural change, consideration should be given to meeting the needs of stakeholders, maintaining the integrity of the record, and communicating the difference between the current culture and the new culture, which means explaining how the court’s record-making business will be different and sustaining the change.”¹²

COSCA called on courts to “develop standards for topics including equipment, operation, security, storage, backup, retrieval, transcription and certification, redaction, retention, custody, and public access.”¹³ While recommending that state courts should move to digital recording, COSCA requested the National Center for State Courts to:

⁸ Ibid, page 5.

⁹ Ibid, page 6.

¹⁰ Ibid, page 12.

¹¹ Ibid, page 9.

¹² Ibid, page 14.

¹³ Ibid, page 14.

- Develop comprehensive model standards that govern the technology, archiving, storage, and retrieval of electronic recordings of court proceedings and safeguard the integrity of the record
- Compile a resource reference on standards and procedures for transcript production for use by the courts

B. State Justice Institute Funding

The National Center for State Courts secured funding from the State Justice Institute to respond to the COSCA requests by developing technical standard requirements for digital recording technology and by developing procedures and techniques for the use of the technology and for transcript production. This paper provides those procedures and standards.

This paper is not an assessment of whether an accurate, complete, and timely record of court proceedings can be produced using the traditional model of stenographic reporting, nor is it an assessment of whether it can be produced using digital recording.

This paper does set forth practices and procedures that should be established and implemented before making the record using digital recording technology and it sets forth the standards for the digital recording hardware and software and peripheral equipment that is needed in order to capture and preserve a complete and accurate record of court proceedings.

Such practices and procedures are necessary for Judges and administrators to feel confident that an accurate record of court proceedings is made and for Judges to feel comfortable knowing that trials and other court proceedings will go as smoothly as they have with the stenographic court reporter. Judges need to be assured that no courtroom testimony will be lost and that no confidential or off the record conversations will be inappropriately disclosed or published in the public transcript. These practices are necessary for trial and appellate Judges and for attorneys to feel confident that an accurate and timely transcript of court proceedings will be available and can be produced.

C. Current Usage of Digital Recording in General Jurisdiction Courts

A number of states and territories have implemented digital recording in their courts. Six of the states, Alaska, Indiana, New Hampshire, Oregon, Utah, and Vermont, and three of the territories, Guam, Northern Mariana Islands, and Puerto Rico use audio digital recording to make the record in all or most of their general jurisdiction court sessions.¹⁴

¹⁴ National Center for State Courts. State Court Organization. 2012.
<http://data.ncsc.org/QvAJAXZfc/opendoc.htm?document=Public%20App/SCO.qvw&host=QVS@qlikviewisa&anonymous=true>

Of the other states using digital recording to make the record in their general jurisdiction courts, New Jersey uses digital recording in approximately 90% of its court sessions, Massachusetts in approximately 40% of its courts, and Minnesota in approximately 25% of its general jurisdiction courtrooms. Kentucky uses video recording technology in approximately 60% of its general jurisdiction courtrooms.¹⁵ Many other state and local jurisdictions use digital recording in their limited jurisdiction courts and in some of their general jurisdiction courts.

¹⁵ National Center for State Courts Survey of Human Resources Directors, June, 2013.

II. Governance, Organization, Structure

Oversight over the digital recording program and responsibility for its success needs to be clear. The National Center for State Courts' *Principles for Judicial Administration* addresses the importance of governance in producing desired outcomes.

Principle 1: Effective court governance over all court programs requires a well-defined governance structure for policy formulation and administration.

*Commentary: The governance structure should be apparent and explicit with clearly defined relationships among governing entities, presiding judges, court administrators and various committees.... The purpose...is two-fold. First, it should enable development of statewide or court wide policies that ensure uniformity of customer experience throughout the state or court. Second, the governance structure should enable reasonably uniform administrative practices for the entire court system that provide the greatest access and quality at the least cost....*¹⁶

Any program to implement or expand digital recording of court proceedings must make clear who has authority for determining whether digital recording will be used, in which proceedings, and how it is to be implemented. Such authority must include responsibility for determining and enforcing the procedures to adopt and the technology standards that will be required.

Successful implementation is more likely if the administrative authority secures buy-in from all stakeholders before implementation and continues to retain buy-in during implementation.

The court should establish by court rule or administrative order the person or office responsible for:

- Hiring persons responsible for monitoring the digital recording of court proceedings
- Assigning courtroom monitors to courtrooms, and, in particular, assigning courtroom monitors to courtrooms when the regularly scheduled monitor or judicial assistant is absent
- Supervising, training, disciplining, and terminating courtroom monitors
- Supervising and training court staff on procedures for capturing, preserving, and transcribing digital recordings and on procedures for providing access to court proceedings
- Capturing, storing, archiving, and retrieving digital recordings
- Coordinating the digital recording program with other departments at the court or office, such as coordinating with the information technology division on desktop support and

¹⁶ Principles for Judicial Administration. National Center for State Courts. July, 2012. Page 3.

integration with the case management system, coordinating with the court operations division on establishing processes, and coordinating with the education division on training

- Managing the preparation of transcripts of digital recorded proceedings¹⁷

A. Ownership of the Official Record

It is important that court leaders make clear that the digital record of court proceedings is owned by the court and that the court is responsible for storing and archiving the record. Before implementing digital recording, court leaders must clarify by court rule or by administrative order that the digital record and any notes or work papers of the courtroom monitor are the official record and are owned by the court. Work papers may include digital or handwritten appearance sheets, witness lists, exhibit lists, and word lists. The court rule should make clear who is responsible for establishing procedures for the retention, storage, archiving and retrieval of recordings and accompanying work papers. The procedures should make clear who (the courtroom monitor, court clerk, or other staff person) is responsible for each action.

B. Access to the Digital Recordings

It is important that court leaders make clear who has access to digital recordings of court proceedings. The court must make clear which recordings are accessible to the general public, which recordings are available only to the parties or attorneys of record of a case and which recordings are available only by court order (see Section IV.A of this paper).

It is important that all court staff, transcribers, and stakeholders understand court procedures on the provision of access to recordings and transcripts.

C. Oversight over the Digital Recording Courtroom Monitor

Court leaders must make clear how the digital recordings will be monitored and who is responsible for establishing courtroom monitor procedures and for ensuring that the monitor follows those procedures. In some states that have implemented digital recording, the monitor is a judicial assistant or other member of the judicial support team and is accountable to the Presiding Judge for performance. In other states, the monitor is a member of the clerk's office staff and is responsible to the clerk for performance. Job titles may include digital court recorder, digital recording monitor, digital court reporter, reporter, or courtroom monitor. For purposes of this paper, the monitor is referred to as the **courtroom monitor**.

¹⁷ For an example of a state's rule or order, see Supreme Court of Colorado, Chief Justice Directive 05-03, June, 2009. *Management Plan for Court Reporting and Recording Services*.

Oversight of the courtroom monitor should include the same basic human resources principles that apply to oversight over all court employees:

- **Job Description:** If the courtroom monitor is an employee of the court, they must have a job description that sets forth major duties, minimum education, professional certification, and experience requirements along with who is responsible for his or her supervision. If the courtroom monitor is a contractor, the contract must set forth the major duties and performance expectations and establish responsibility for supervision. The contract should also address confidentiality requirements and the security of the recordings. Whether an employee or contractor, the court must make it clear that the court owns the record.
 - In general, courtroom monitors should possess a broad understanding of court procedures and principles including what can be expected next in the standard order of a trial, general familiarity with the legal terminology commonly used by Judges and attorneys, and specific knowledge related to the digital audio recording equipment and awareness of courtroom decorum.¹⁸
- **Conduct and Professional Ethics:** It should be clear that the employee or contractor courtroom monitor must comply with all statutes and court rules and that the courtroom monitor is subject to the court system's code of conduct for court employees. The monitor should take any oath of office required of other court employees. The court should consider adopting conduct and confidentiality provisions for courtroom monitors similar to those adopted by the American Association of the Electronic Reporters and Transcribers. The AAERT Code of Professional Ethics can be found in Appendix E of this paper.
- **Responsibilities:** The court should make clear the procedures that the courtroom monitor must use to monitor the digital recording and any other procedures expected of the courtroom monitor, including the marking of exhibits and swearing in of witnesses in the courtroom, the maintenance of evidence, and the storage, archiving, retrieval, and transcription of the digital record (see Section III of this paper for additional details).
- **Training:** Courtroom monitors must receive initial hands on start-up training and follow-up training from the digital recording vendors and court staff both on start-up procedures and on advanced features of the system. They should also receive training from court personnel on courtroom procedures and storage responsibilities and must receive periodic training on these responsibilities. Training should include logging procedures, basic audio training sufficient to enable them to understand the strengths and liabilities of microphones, equipment set-up, operation and maintenance, failure recovery, trouble shooting, backup and restore procedures, routine inspection procedures, microphone

¹⁸ American Association of Electronic Reporters and Transcribers, Inc.

placement, and transcript processing.¹⁹ Courtroom monitors should also receive continuing education on court terminology and on ethical responsibilities.

- **Performance:** The court should establish clear performance expectations for courtroom monitors. Courtroom monitors should receive periodic performance reviews along with training in areas identified as needing improvement.

¹⁹ National Association for Court Management, *Making the Verbatim Court Record*, June, 2007.

III. Procedures and Best Practices for the Use of Digital Recording Technology

Courts must establish clear, effective procedures to ensure that courtroom proceedings will be recorded and preserved. The procedures identified in this paper, if fully implemented, will enable Judges to focus on presiding over court proceedings knowing that the record is being preserved and an accurate and complete transcript can be produced.

A. Signage

Signage provides important reminders to litigants, staff, and the public that the proceedings are being recorded and that anything spoken may be recorded.

Suggested language on signs placed at each table microphone, podium, and on the Judge's bench:

- The court may be electronically recording proceedings.
- Speak clearly and slowly into the microphone.
- Speak in normal conversational tone. Do not whisper.
- Do not speak over another person.
- Remain seated or at the podium.
- Mute microphone for private conversations.²⁰

Suggested language on a sign posted at the entrance door:

The court may be electronically recording proceedings. Silence in the gallery and litigation area is required. Remain seated and do not approach the bench until instructed to do so.²¹

Courtroom participants may also need to be informed that the recording system may purposely or inadvertently remain operational between proceedings and/or after the proceeding has ended.

B. Opening Colloquy

For some or all proceedings, the Judge may choose to supplement signage by opening the court session with an opening colloquy similar to the following:

²⁰ See Wisconsin Digital Audio Recording of Court Proceedings – Policy and Procedures, Section 2.0. September, 2009

²¹ Ibid.

These proceedings are being electronically recorded. Please clearly state your name and appearance for the recording. Speak clearly and directly into the microphone. Do not speak over each other. All responses must be made orally. Avoid gesturing or head nodding, as these gestures will not be captured for the record.²²

C. Procedures for Courtroom Monitors

Courtroom monitors are responsible for producing backed up recordings of courtroom proceedings using a digital recorder.²³ The courtroom monitor produces log notes and other material containing the spelling of proper names, unusual terms, and beginning and end times enabling courtroom playback and the production of an accurate and complete transcript.

In general, responsibilities include:

- Assisting on identifying the best placement of microphones in the courtroom to achieve the goal of maximizing channel-to-channel voice separation for all participants who will speak at the hearing
- Monitoring the recording through headphones to ensure that the proceedings are being properly recorded by the digital recording equipment
- Taking and maintaining log notes and relevant lists of attorneys' names and addresses, witnesses, exhibits, and other information to assist with transcription
- Playing back recorded court proceedings, as directed by the Judge
- Ensuring that the recording is properly stored and archived at the court

1. Case Management System Entries:

The courtroom monitor may also be assigned responsibility for making entries into the court's case management system (CMS). Depending on the nature of the proceeding, extent of log notes required for the proceeding, time available, functionality of the CMS, and ease and speed of entering events and information into the court's case management system, the courtroom monitor may be assigned responsibility for entering the start and end time of each hearing, all appearances, court orders, and next hearing dates into the CMS. For example, at arraignment or change of plea sessions, the courtroom monitor may be assigned responsibility for entering conditions of release, fine amounts, and conditions of probation into the court's CMS.

²² Ibid.

²³ See Best Practices in E-Reporting for Reporters. American Association of Electronic Reporters and Transcribers, Inc. <http://legacy.aaert.org/best.htm>

2. Courtroom Monitor Practices:

A. Prior to the start of the day's proceedings:

- **Supplies:** Make sure that all necessary supplies for producing a recording, making log notes, marking exhibits, and preserving the record are available and accessible. Supplies could include headphones, the court calendar and docket, pens, pencils, legal pads, blank appearance sheets and witness and exhibit lists, and compact disks used for archiving the recording.
- **Daily Testing:**
 - Test the recording and log notes software for their operating functions.
 - Check the microphone and camera placement for each courtroom according to type of case and the flow and movement of the participants.
 - Test the recording quality of each microphone and the wiring by speaking into each microphone and listening to the recorded result on each audio channel. Problems could be caused by the microphones not being plugged into the proper channels or equipment, or not being set on the record mode. Report any problems so that they can be fixed prior to the day's proceedings.
- **Default Settings:** If default settings are used, check whether the system has been set back to the appropriate default setting and in particular that the setting accurately identifies the name of the Judge presiding in that courtroom over the recorded proceeding.
- **Communication with the Judge:** Determine how the Judge would like to be notified or interrupted by the courtroom monitor during the court proceeding if the record is not being captured.

B. During the day's court proceedings:

- **Operation:** The recording system should be in operation at the direction of the Judge.
- **Confidential Communications:**
 - The court should post signs providing notice that any conversations occurring in the room and, in particular that any conversations at the attorney/party tables may be recorded at any time
 - The court should install microphones with "hold to mute" buttons for microphones used by attorneys and the Judge.
- **Monitor Through Headphones.** Using headphones, monitor what is being recorded onto the audio channels, not what is being said into the microphones, ensuring that the proceedings are being adequately and intelligibly recorded (known as "confidence monitoring").

- **Interrupting Proceedings:**
 - The courtroom monitor should strive for an unobtrusive presence interrupting proceedings only as necessary and in accordance with protocols established with the Judge. It may be necessary to interrupt proceedings to:
 - Request the correct spelling of names or technical or unfamiliar names
 - Request that a party move closer to the microphone
 - Request that a person stop tapping a microphone or shuffling papers too close to it
 - Request that a non-verbal response be made audible
 - Request that a party slow down his or her speech pattern
 - Interrupt the proceeding and notify the Judge when a record is not being made. Examples include:
 - Technical failure of the equipment
 - The speaker's words are inaudible for reasons including:
 - The audio level of the recording is not adequate
 - The parties are speaking too softly or too rapidly
 - The parties are talking simultaneously over each other
 - Excessive shuffling of papers
 - A microphone remains muted
 - Excessive gallery or extraneous noise
 - Courtroom monitors must use their best judgment before interrupting. An interruption may not be desirable at a critical point in testimony.
- **Off the Record Discussions:**
 - The recording should be stopped for "off the record" discussions only at the direction of the Judge and only as long as the judge directs that the discussions not be recorded.
- **Sidebar or Bench Conferences:**
 - Sidebar or bench conferences are part of the official record and need to be recorded unless the Judge orders otherwise. Because these conferences are often whispered, it is important to monitor the volume and to ensure that the log notes identify each speaker.
- **Jury *Voir Dire***
 - Jury *voir dire* can be challenging when creating a record. Creative microphone placement and/or the use of wireless microphones can help.²⁴ The Judge and attorneys should address jurors by name or number for

²⁴ Wireless microphones must include an encryption package to ensure audio security.

proper identification during questioning. Courtroom monitors may need to be particularly vigilant at asking potential jurors to speak up.

- **Language Interpreters:**

- Digital audio and video recording preserves both the English and the foreign-language interpretation making it possible to confirm accuracy.
- The interpreter must be provided with a microphone assigned to a channel that is not the same as the channel assigned to the witness in order to ensure that the witness is not speaking over the interpreter. Log notes on when the interpreter is interpreting and the identity of the speaker whose words are being interpreted are particularly important.

- **Log Notes:**

Log notes allow for a simplified search of the electronic record for the playback of testimony during and after court proceedings as well as for the creation of a transcript from the electronic record.

- **For ALL court proceedings, log notes must contain:**

- **Names:** the full name of the Judge, case caption, case number, and the names and spellings of the parties and attorneys present and not present.
- **Time:** Log notes must allow the courtroom monitor and transcriber to be able to identify the beginning and end time of each proceeding.

Note: The digital recording software should ideally be able to automatically insert into the system the beginning and end time along with any time that the recording is paused, started or stopped; however, in court sessions where proceedings overlap, the courtroom monitor will need to be particularly diligent at logging start and stop times and may not be able to rely on the software to do so.

- **For trials and evidentiary hearings, log notes must contain:**

- **Names:** the full name of the Judge, courtroom monitor, case caption, case number, and the names and spelling of the parties and attorneys present and not present.
- **Time:** Log notes must allow the courtroom monitor and transcriber to be able to identify the beginning and end time of each proceeding.

Note: The digital recording software should ideally be able to automatically insert the beginning and end time along with any time that the recording is paused, started or stopped (see Section V.B.2 for additional information). Log notes should also identify the time that each type of examination (direct, cross, *voir dire*) begins and the time that any off the record discussions begin, and the time that the jury enters or leaves the courtroom.

- **Spelling and Unusual Names and Terminology:**
 - To assist transcription and playback, log notes should include the spelling of uncommon words, proper nouns, unusual phrases or jargon, events occurring on the record, attorney objections, and court rulings.
 - **Word List:** To assist transcription, the courtroom monitor should consider a separate word list with the spelling of proper nouns and technical jargon.
- **Trial Events:** For trials and evidentiary hearings, log notes should be used to enter the calling and swearing in of witnesses, the beginning of each type of examination, all attorney objections and court rulings, exhibit marking and identifying, motions for admission of evidence, references to statutes and rules and any other information that would assist transcription. Commonly used abbreviations may be useful.
- **Identifying Speakers by Channel:** Because speakers may move to and speak from multiple microphones during the proceeding, the courtroom monitor may need to develop a code to ensure that the log notes contain and the transcriber can identify who is speaking on any one channel at any one time.
 - Note: A standard setup for channel allocation could serve as a useful guide for transcribers in the majority of cases. For example:
 - 1 – Judge/Jury/Bench or Well
 - 2 – Witness
 - 3 – Defendant
 - 4 - Plaintiff
- **Non-Verbal Occurrences:** Log note should contain non-verbal occurrences, such as “witness nodded head” and could indicate times when attorneys are conferring in whispers off the record.
- **Abbreviations:** Abbreviations are acceptable for commonly understood standard terms; e.g. YH for “Your Honor.”
- **Shortcuts:** Courtroom monitors should develop shortcuts as needed to identify speakers in the log notes during rapid-fire colloquy with the Judge; i.e. Jones, then Smith, then Judge, Jones again, then Smith, etc.
- **See Appendix F** for a list of entries that should be made into the log notes to aid transcription of the record.
- **Appearance/Information Sheet:**
 - For indexing case information and to assist transcription, particularly to prepare the transcript title page, enter case information onto a digital or

paper appearance/information sheet identifying the case along with the Judge's name and the names and spellings of the attorney(s) representing the parties in the case.

Note: Some systems enable this information to be entered into the recording system when a recording is initiated, preserving it in a searchable format directly associated with the recording.

- **For most hearings, the Appearance/Information Sheet should contain;**
 - The date of the hearing
 - The full name of the Judge and courtroom monitor
 - The case number, case name and type of hearing
 - The full names and spellings of attorneys and self-represented litigants and the channel designation and seating arrangement for all parties
 - Speaker ID codes selected for the log notes

Note: Some systems enable courtroom monitors to create name macros for all parties present for a case, enabling the monitor to quickly insert the full name of a party or his or her attorney by a single mouse click or entry or a keystroke combination.

- **For trials and evidentiary hearings, the Appearance/Information Sheet should optimally contain:**
 - The date of the hearing
 - The full name of the Judge and courtroom monitor
 - The case number, case name and type of hearing
 - The full names and spellings of attorneys and self-represented litigants
 - Law firm and/or government agency names, street addresses, e-mail addresses and business and cell phone numbers
 - Speaker ID codes selected for the log notes
 - The channel designation and seating arrangement for all parties,
 - The names of all witnesses
 - The description and number for all exhibits
- **See Appendix G of this Paper: Appearance/Information Sheet**

- **Playback:**

- As directed by the Judge, locate the requested portion and play it back, using the courtroom public address system or sound reinforcement system such as a set of speakers connected to the recording personal computer.
- After the playback, ask the participants to provide time for the courtroom monitor to resume duties before resuming the hearing.

Note: The recording system should support immediate resumption after playback, with no interruption in the proceedings.

C. At the conclusion of the day's proceedings:

- **Storage:** Follow local court practice to properly store and archive the recording at the court. This could include:
 - Backing up the day's recordings to the court's network [Note: If the system does not enable backing up onto the network, back up the day's recordings onto a compact disk (CD)]
 - Labeling the recordings to enable their retrieval during the retention period
 - Setting the system on the appropriate default setting for the next day's proceedings
 - Shutting down the court recording system.

D. Procedures for Courtroom Judges

- Verify with the courtroom monitor that the system is operational.
- Make participants aware that the court proceeding is being electronically recorded.
- Remind participants to speak loudly and clearly.
- State each case by name and number and type of proceeding each time a case is called.
- Remind all participants to properly identify themselves when making their appearance at the beginning of each proceeding and to spell their names for the record.
- Request attorneys to give their appearances at the start of each day of a continuous, multi-day trial.
- Remind attorneys to take necessary precautions (i.e. cover the microphone or use the mute button) when they wish to consult with clients during the hearing.
- Point out to those present that coughing or sneezing near a microphone will adversely affect the recording.
- Permit attorneys to remain seated during proceedings. In any event, make sure that attorneys are speaking into a microphone.
- Remind participants that only one person should speak at a time. Discourage overlapping questions and answers or colloquy.
- Discourage speakers wandering around the courtroom unless wireless microphones are used.
- Hold on-the record bench conference conversations at the bench conference microphone.
- Leave the Judge's bench microphone turned on while in session.²⁵

²⁵ Based upon Utah Judiciary Best Practices and based on the work of the American Association of Electronic Reporters and Transcribers, Inc. <http://legacy.aaert.org/best.htm>

E. Procedures for Attorneys and Courtroom Participants

- Attorneys should inform their clients of the method of recording being utilized and take necessary precautions to protect disclosure of confidential communications during proceedings.
- Upon speaking for the first time, identify yourself for the record. Spell your name and state whom you represent.
- Provide the courtroom monitor with the correct spellings of unusual or technical names and words used by you or your witnesses.
- Avoid moving microphones.
- Always remain within arm's reach of a microphone. If you approach the bench, wait until you are within arm's reach of a microphone before speaking again.
- For the benefit of the written record, try to avoid speaking while witnesses or other counsel are speaking. Only one person should speak at a time.
- Address jurors by name or number for proper identification during voir dire.
- In that the recording system can only pick up verbally spoken words, avoid "uh huh," head nods, and gestures. Solicit verbal responses from all witnesses.
- Avoid shuffling papers or making other noises when people are talking. If you have a cold, move away from the microphone before coughing or sneezing.
- Use the mute button while consulting with your client or making any statements that you do not want recorded. Be sure the mute button is off and the microphone is on before proceeding.
- When at a bench conference, avoid blocking the microphone with documents and speak one at a time into the sidebar microphone.
- On days where there are multiple cases set for hearing, hold discussions outside the courtroom or at least away from microphones.²⁶

²⁶ Ibid.

IV. Transcription and Delivery of the Record

A. Access to Recordings

Digital recording enables the state or local court system to make it possible for persons to obtain recordings of court proceedings. The court should establish by rule or administrative order whether parties, attorneys, other case participants or the general public can have access to recordings of some or all court proceedings, and if so, how persons can request recordings and how the court can distribute them.²⁷

The rule or order should include provisions on whom, if anyone, can have access to recordings of proceedings that are closed to the public or can have access to recordings of proceedings sealed by the court and should include provisions on whom, if anyone, can have access to any courtroom conversations that take place between or after court proceedings that had been purposefully or inadvertently recorded.

The rule or order should include a provision on whether court employees, transcribers or the general public can listen “live” to the recordings of court proceedings from a remote location.

The rule or order should also specify whether the court can deliver the recordings physically by handing or mailing a compact disk or whether the court can electronically transmit an electronic file of the recording.

B. Preparation and Distribution of the Transcript

Digital recording also enables the state or local court system to establish a transcript management system that efficiently and effectively manages the life cycle of transcripts from initiation of the transcript request through the electronic or paper distribution and filing of the transcript.

Courts should establish clear responsibility and procedures to manage the transcript production process.

State court systems should establish minimum qualifications for persons who transcribe court proceedings. Qualifications should include knowledge of legal terminology and of court procedure. Courts may also consider persons with professional certification from federal or state judiciaries or professional associations such as AAERT. Persons who serve or have served as stenographic reporters, courtroom monitors, judicial secretaries or judicial assistants often meet the qualifications needed to produce a quality transcript.

²⁷ The federal courts have established procedures for accessing recordings through their Public Access to Court Electronic Records System (PACER). http://www.pacer.gov/announcements/general/audio_pilot.html

State and local courts should establish clear performance expectations of timeliness and quality for employees or contractors assigned the responsibility of producing transcripts.

See Appendix D of this paper for steps to take before contracting for transcription services. Contracts should include any state or local specifications and minimum requirements for transcript production, and should be awarded only after following any state or local required competitive bid processes.

C. State Court Practices and Rules on the Management of Transcript Production

A number of states have established practices and rules for managing the production of transcripts of digitally recorded proceedings, including Alaska, Vermont,²⁸ Oregon, Florida, Wisconsin, Utah, Maryland, New Hampshire, Minnesota, Maine, New Jersey and Arizona. Rules and procedures established by some of these states:

Alaska

Administrative Rule 36 directs the administrative director to prescribe standards and procedures for the preparation of transcripts. The Alaska Court System has adopted a Manual of Transcript Procedures, setting forth the standards for the format and preparation of transcripts of court proceedings.²⁹

Oregon

For appeals filed with the Oregon Supreme Court, Oregon's transcript coordinator first examines each notice of appeal to determine whether preparation of the transcript is required. A party designating a transcript as part of the record on appeal must make financial arrangements with the coordinator for preparation of the transcript. The coordinator forwards the notice of appeal, the recordings and a due date to one or more qualified transcribers to prepare the transcript within the time prescribed by court rule.³⁰

Florida

By court rule, only court reporters and transcriptionists approved by the court can produce transcripts.³¹

²⁸ Vermont Rule of Appellate Procedure 10

²⁹ <http://courts.alaska.gov/forms/tf-410.pdf>

³⁰ Oregon Rule of Appellate Procedure 3.33. Persons Responsible for Preparing Transcript.

³¹ Standards of Operation and Best Practices for Court Reporting Services in Florida's Trial Courts, Section XV.

Wisconsin

The digital court recorder (courtroom monitor) is the primary resource for transcript production unless the digital court recorder is unable to generate a timely transcript. Wisconsin has established a transcript request form.³²

Utah

The Utah Judiciary has established a web-based transcript management system that provides transcribers with online access to recorded hearings while serving attorneys and self-represented parties to request transcripts and to enable them and the Judge to view the electronically filed transcript in the court case management system.³³

The Utah Judiciary contracts for transcription services. Many of Utah's transcribers are former stenographic court reporters. The transcript fee is paid directly to the transcriber.

Transcripts for cases on appeal are now being completed within 22 days of the request; prior to Utah's 2009 transition, to digital recording, transcripts were being completed within 138 days. Transcripts of cases not on appeal are now being completed within 12 days.

The Utah transcript management system features:

- A strong governance and management structure, with a transcript manager responsible for maintaining an official court transcriber list.
- A transcript request application that interfaces with the transcript management application for request processing that:
 - Permits online transcript requests by attorneys and litigants
 - Accommodates paper requests
 - Accommodates expedited requests
 - Permits management from one system
- A work queue that enables the transcript manager to prioritize the work in the queue and to establish and modify transcript due dates.
- The ability to see the case management entries and court orders for the respective case.
- The ability to associate documents and audio files to the transcription making them available to the assigned transcriber for downloading.
- The ability to assign the transcript request to the transcriber, along with the ability for the transcript manager to attach the due date and messages or special instructions.
- The ability to capture and produce information for management reports on transcriber workload and whether transcripts are overdue.

³² Wisconsin Digital Audio Recording of Court Proceedings – Policy and Procedures, Section 5.0. September, 2009

³³ Transcript Management. Utah Administrative Office of the Courts

Maryland

The Maryland District Court has established procedures for any person, regardless of whether that person was a party in that case, to request a copy of an audio recording of the case from the clerk's office. The cost of the recording is \$15 per case. The court will provide a CD that can be played back on a Windows-based computer.³⁴

The Maryland District Court has also established a procedure to enable a person who has appealed a District Court judgment in a civil case where the amount in dispute is more than \$5,000. The cost of the transcript is \$3.00 per page, payable to the court³⁵ (see standards for transcription in Section V.F. of this Paper – The Record and Transcription).

New Hampshire

The New Hampshire Judicial Branch implemented digital recording in all state courts more than seven years ago. At the Superior Court level, a trained court monitor is assigned to each courtroom and is responsible for recording and taking log notes for all matters. Lower courts, including family, district, and probate courts may have a monitor for certain proceedings, but recording is often unmonitored. In all courts, equipment and sound quality are checked on a regular basis.

Best practices for digital recording monitors were established and documented several years ago. Transcription standards were first put in place with the introduction of digital recording and have been refined over the last ten years. Transcription standards define format guidelines and general rules about how to handle all potential courtroom events within the transcript.

The public can purchase audio recordings for a small fee. Certified transcripts and audio can be ordered via a single secure website (www.nh.tcro.us). If the requested transcript is not court/government paid, the ordering party can pay required deposits and final charges via credit/debit card through the website. Available transcript turnaround times range from 1-day, or even same day, to 45-day for appeal transcripts.

Because the typing of transcripts is not a core judicial branch function, NH decided to outsource that task, submitting it to market forces through a competitive bid process. All transcription is outsourced to a single transcription provider, AVTranz, who built and manages the New Hampshire website per the court's specifications. When a transcript order is placed, audio and notes are automatically requested from the court location where the audio resides. The court monitor or other court staff from the specified location uploads the digital audio and associated notes and paperwork via the same website. When the transcript is complete, the customer is

³⁴ <http://www.courts.state.md.us/district/forms/acct/dca027br.html>

³⁵ Ibid.

notified via e-mail and can login to download the completed transcript from the website. Requests for audio are also delivered through the website in a Windows Media format.

The digital version of the transcript provided by vendor is the official NH transcript.

The court has access to all transcripts and can monitor the progress of transcript production as an order moves through the process.

Minnesota

The Minnesota State Court Administrator's Office offers certification for the Electronic Court Reporter (ECR) and the Electronic Recording Equipment Operator (EREO).

Minnesota has adopted a comprehensive *Handbook for Electronic Court Reporters* that contains certification requirements, information, and guidelines for individuals seeking certification as an ECR. The Handbook has a dual purpose: to serve as a method of self-study for certification, and as a reference guide.

V. Digital Recording Equipment and Technology Standards

The reliability of digital recording requires safeguards that the system is functioning properly. Reliability depends on the quality of the equipment and on security policies governing use of the equipment. By purchasing and installing equipment in accordance with these standards, courts will be able to capture the record and enable the production of an accurate and complete transcript.

A. Digital Recording Format Standards

1. **Open Architecture** is needed in order to take advantage of existing and new technology for the spoken word. At this time, all systems must be able to export to widely-used and industry standard including WMV, WMA, MP3/4, AVI, and Red Book.

Note: In order to be able to recover audio should the vendor go out of business, courts should as a matter of practice convert all recordings to the widely used standards and not just store the recordings in the original, multi-channel proprietary format.

2. **Digital Compression Formats:** Digital compression that is applied should allow for a clear audio recording to be created and therefore should be tested whenever it is implemented or changed for quality by the court users. The solutions should allow the court to select from multiple compression formats.
3. **Noise Filtration:** Noise filtration and automatic gain control must be provided with the digital audio recording system.
 - Noise filtration and automatic gain control are features of an audio processor. Please note that these features may be part of the digital recording software. Integration of these technologies as part of the audio recording process, when properly configured, can have beneficial results to the quality of the recording. Also, digital echo cancellation within the audio processor should be considered essential for all courtrooms that may be used for teleconferencing and/or videoconferencing. These technologies should be appropriately connected to the audio system and configured by a suitably experienced audio systems engineer.
4. **Capturing Video Recordings:** Video recording should be considered for cases that involve a sign language interpreter in order to preserve a record of the interpretation. The system should allow for the court to be able to upgrade the system to capture a video record. Ideally the system upgrade would have minimal impact on the user interface or operation of the system.

B. Digital Recording System Specifications

1. Administration:

- **Identification of Users:** The system must allow for identification of the monitor/user by username and password.
- **Access:** The system must allow for network and user profile based security to control levels of access to the recordings in order to prevent unauthorized access and potential damage. Levels of access could include:
 - Public records: accessible to the general public
 - Confidential records: accessible only to the parties, attorneys of record and other persons specifically authorized access by court order
 - Sealed records: accessible to persons or court staff only by court order

Ideally, recording systems should be flexible enough to accommodate a court's access restriction levels to recordings. Recording systems should provide the ability to:

- Easily and quickly apply access levels to an entire recording when initiated
 - Apply access levels to portions of a recording, both during and after a session
 - Prevent persons from listening to a hearing from a remote location while the hearing is in progress when appropriate
 - Restrict court staff access to recordings when appropriate
- **Management Reports:** The system should be able to provide meaningful management reports of common relevant analytical and operational information including utilization, storage capacity, audit logs and security access information. Courts should review the standard reports provided with the system to determine if they will meet the court's needs.

2. Time-Coding the Recording:

- The system must have the ability to allow for a time code to be embedded in the digital recording file. The date and time should be recorded and stored for each log entry.

3. Speaker Identification:

- The system should have the ability to register the identity and register in the record the name of the speaker by location (such as microphone and/or recording track). The system should also allow for search of the record by speaker.
- Speaker identification has special relevance to proceedings conducted remotely by video or audio teleconference.

4. Monitoring and Making Notes:

- The system must have the ability for the monitor, Judge, and courtroom clerk to make log notes and to take and save individual private notes with date, time, and with security control. The system should have the ability for attorneys and all trial participants to note the actual recording time either onto their own individual personal computers or manually onto their paper notes, enabling them to make and preserve log notes and individual private notes or bookmark a spot for later reference or annotation. The system should allow the notes to be saved on the user's individual personal computers or in paper format.
- The system should have the ability to embed tags into the digital audio record using text or symbol identifiers and store that data in the recording. Identifiers may be predefined in a database and/or assigned to keyboard keys for quick capture.
- Consideration should be given to systems that can import data such as the case number and participants' names from the court's case management system and in particular consideration should be given to systems that can load the Judge's calendar into the recording system in a macro type format, enabling the courtroom monitor to double click on a case to insert the case name and number and an associated time stamp into the logging system.
- The system must have the ability to annotate potentially sealed and confidential matters and to seal such matters both during the proceeding and, as directed by the Judge, after the proceeding (See Section B.1.Access, above).
- The annotation system should include a spell-check feature with a dictionary that can be customized to include the correct spellings for the names of Judges and attorneys. It should also include capabilities such as **bold**, underline, and *italics*.

5. Search Features for Playback:

- The system must allow for field searches of log entries to quickly and easily locate a digital recording for playback. The system should provide the ability to search all data fields for any key word, phrase and series of numbers that are logged by the courtroom monitor. Searches should include case name, case number, case ID, time and date of the record, court department, location, name of witness and any other information that will enable a Judge to find testimony needed to prepare findings. This data may be embedded in the document as meta-data or connected to an external database system.

6. Playback:

- The system must allow isolation of any one of the audio channels on playback. The system must allow playback of testimony through the courtroom sound address system while simultaneously recording. This should allow court monitors

to spot-check the record for quality control purposes as well as initiate the digital recording equivalent of a read back.

- It should also allow for playback of bench conferences or other testimony without broadcasting over the courtroom sound system.
- It should have the ability to redact a copy of the original recording before broadcasting.
- It should support immediate resumption with no interruptions to the proceedings.

7. Default and Custom Audio Levels:

- The system should enable the user to set up and save all settings including the default/reset configuration. The settings should also be able to be easily exported and/or imported and saved on a backup media/system.

8. Backup, Storage, and Security:

- The recording system must automatically back up (mirror) the recorded audio/video simultaneously in two locations/machines as it is being captured for record security purposes. Courts may consider the size of the digital audio record as a differentiator in selecting a system.
- The system must allow for the digital audio record to be stored both locally and on a network shared server, depending on the court's size and computer network capabilities.
- Courts may also consider implementing a fully redundant back-up recording system given the relatively low cost of the software and computer hardware (including disk storage) required. The backup recorder could be scheduled to automatically start and finish at certain times each day and in turn, the record can be kept or destroyed on a rolling basis whilst the primary recorder is operated by the designated operator. This approach provides redundancy in the event of operator error or primary recording system failure.
- The system must have record-over protection and must have provisions to minimize the possibility of record tampering after it is recorded into the system.
- The digital record system must provide the ability to apply security access levels to both the entire record and portions of the record using encryption or other selected technology, thereby enabling the court to identify whether a portion or all of the record is confidential or sealed. The system must enable the operator to apply the access level both during the proceeding and after the proceeding. Sealing may or may not involve the use of file encryption.
- The system must be able to establish and control different levels of access to the record based upon user identification or role.

Note: It would be useful if the system enabled the court to apply default access levels to recordings based upon the hearing type.

- The system should also include a utility to monitor the saved audio and provide a means to delete audio based on date and percentage of local drive filled.

9. Connecting to External Audio Sources:

- If a videoconference or teleconference is used in the courtroom, then an additional audio, digital signal processor, and audio mixer connections, and software support must be provided. Only industry standard connections should be used in this context.

C. The Trial Courtroom – Equipment, Electrical Connections, and Wiring

1. The Number of Audio Recording Channels:

- The system must have a minimum of four (4) separate audio recording channels.
- Consideration should also be given to an additional channel for the separate recording of an interpreter. This channel, however, needs to be managed by careful use of the muting functionality to ensure that a witness's private conversations are not recorded as part of the record.
- Courts incorporating additional technologies may use additional microphones, possibly at the podium, for evidence presentation, or with telephone conference systems and/or video conference systems. These courts may choose to capture additional audio inputs into an autonomous recording channel or elect to capture as many as eight recording channels.

2. Electrical Connections and Locations:

- Courts need a duplex outlet at:
 - The cabinet location
 - The Judge's bench
 - The courtroom monitor's station
 - A duplex outlet anywhere there will be a monitor or projector and screen

3. Courtroom Wiring:

- Generally, wiring should be balanced, shielded cabling so that noise and hum are not produced. The wiring system must support industry standard cable and connections. Use of proprietary cable and connection hardware is not recommended.

4. Interface to Courtroom Audio/Visual Control Systems:

- An integrated control system approach for each courtroom should be implemented in order to reduce complexity and facilitate training and use. The court recording system should use industry standard connections and potentially use or be able to

be upgraded to provide access to widely used control audio visual systems, which at the time of this writing are provided, for example, by AMX, Crestron, and others for a touch screen interface.

5. The Ideal Courtroom Equipment List:

- Audio/Video Processor
- Stereo, noise cancelling headphones with a uniform frequency response
- Microphones (see C.7., below)
- Audio mixer capable of handling installed and future audio inputs with software based configuration
- Direct telephone record capability, with one channel recording directly into the phone line
- Digital IP Cameras - if video is being captured.
- Recorders or audio/video capture interface for PC based recorder
- PC with monitor for recording and monitoring/controlling software
- Recording in progress indicator (either separate or software based)
- PA audio distribution system
- Uninterruptible power supply (UPS)
- Assistive Listening System
- Document camera w/ Laptop input
- VHS/DVD or Media PC recorded content player
- Courtroom Monitor/Projector
- Individual displays for Judge and attorneys
- Flat or projection displays for evidence presentation
- White noise or other audio masking capability

6. The Minimum Courtroom Equipment List:

- Audio/Video Processor
- Headphones
- Microphones
- Digital IP Cameras – only if video is being captured.
- Recorders or a audio/video capture interface for the Personal Computer based recorder
- A Personal Computer with a monitor for recording and monitoring/controlling the software

7. The Types of Microphones (See Appendix B of this paper: More on Microphones):

- Courts should use “professional grade” microphones.

- The type of microphones used depends on the set up of the courtroom and the physical characteristics of the area and person to be recorded. The guiding principle should be to get the microphone as close to the speaker as possible. Further, microphone standardization within a courthouse is advisable for quick replacement with backup equipment and maintains the calibration settings in the audio mixer.

8. Courtroom Microphones: The Number and Locations of Microphones:

- The type of case and the flow and movement of the participants in the case should all be considered when locating microphones and the types of microphones to be used. In general, microphones should be placed in any location in which a court participant speaks.
- **The Number and Location of Microphones in a Typical Jury Courtroom:**
Microphones must be placed at:
 - The Judge's bench, one for the Judge and one for the speaker approaching the bench
 - The court clerk area
 - The witness area
 - The attorneys' tables
 - Any courtroom podium
 - The location of the language interpreter
 - The jury box (the location of the microphone may depend on the stage of the trial; i.e. juror questioning during voir dire versus closing arguments by the attorneys)
 - Presentation areas such as a whiteboard or video screen
 - Other areas, depending on the courtroom and the movement of speakers within the courtroom
- **The Number and Location of Microphones in a Typical Non-Jury Courtroom:**
 - A minimum of four (4) microphones is required, with five (5) microphones required if the courtroom has a podium. Microphones must be installed at the Judge's bench, the witness box, at the podium (if one is present), at attorneys' tables and, as needed, at the space used by the language interpreter.
- **Wireless Microphones:**
 - Wireless microphones are generally not to be used for the court record system except in special circumstances such as required because of the size of the courtroom, the courtroom being used for ceremonies such as bar admission or the court has dedicated audio visual support staff to maintain the wireless

microphone batteries and secure them from theft (both accidental and purposeful).

- Wireless microphones have the following issues/limitations:
 - Wireless microphone battery life is limited to six or less hours. Sufficient spare batteries must be maintained and changed out on a routine basis and the battery needs to be checked on a daily basis.
 - Quality wireless microphones are costly. Much more than any single microphone by itself. If a court determines it wants to use wireless microphones, get a good quality system in order to avoid drop-outs or radio or phone interference.
 - The court must be prepared to deal with issues regarding the capture of non-intended communications into the record. Attorneys may forget they are “wired” into the system when trying to privately confer with their clients. Since wireless microphones can broadcast despite movement to a foyer or otherwise private location, a warning should be posted wherever wireless microphones are used.
 - A cardioid (focused) wireless microphone should be used in order to minimize extraneous audio capture.
- **Microphone Mute Pause Alarms:**
 - Each individual microphone of the Judge and the attorneys, at least, must have the capability of being muted by a momentary switch (a spring-loaded push to mute switch). The momentary switch is important to ensure that an attorney or Judge does not forget to stop the muting of the microphone.

9. Confidence Monitoring

- It is essential that the courtroom have a visual indicator that the audio is being successfully recorded, visible by all courtroom participants. The recording software must include both a visual cue (text or blinking light warning) and an audio cue (a short beep) to alert the recording monitor staff when the microphone is muted or, for any reason, when no audio is present or when audio volumes are too low. The audio alarm should also be selectable (on or off).
- A virtual level meter must display the audio levels from audio as it is being delivered to the recorder after audio inputs are mixed down to the required number of channels. Since the final recording will have the mixed audio inputs, this is the critical level to be monitored. The display should also be configurable for close view or view from across the room.

10. Headphones for Courtroom Monitors

- Courtroom monitors should be equipped with stereo headphones with long cords, preferably with in-ear or over the ear headsets.

- Headphones should have a uniform frequency response. They should not boost bass or treble frequencies as these frequencies are more likely to carry noise than speech range audio. Noise cancelling headphones can also be very useful for transcription staff working in noisy environments to help them concentrate on the transcription process. For in-court monitoring, operators can generally work with single ear headphones so that they can monitor the recording whilst being able to hear the room.

D. Chambers – Equipment, Electrical Connections, and Wiring

1. Number, Type, and Location of Microphones in Chambers:

Chambers should be equipped at a minimum with one boundary omni-directional microphone placed on the Judge’s desk; however, depending on the size and configuration of chambers, a two microphone/channel recording system may provide better coverage and record. In a two microphone configuration, one microphone would face the Judge and the other would face away to the other participants in the chambers conference.

2. Chambers Control Systems:

Chambers control systems should have a control panel to start/pause/stop recording with indicators that communicate the status of the system. The user interface should be identical or, at a minimum, similar to that implemented in the courtroom. The monitor, or the Judge in those chambers conferences in which a monitor is not in attendance, must also be able to record notes or tag the record and must be able to access playback of previous recordings from the system.

3. Chambers Teleconferences:

Chambers should have the capability of recording teleconferences and video conferences, when necessary. Alternatively, the Judge can clear the courtroom as necessary to enable the teleconference to be held using the courtroom’s equipment.

E. The Appellate Courtroom

1. Audio Channels

The Appellate Courtroom should have at a minimum one separate channel for each Appellate Judge plus additional channels for the appellant and appellee.

2. Microphones

Each Appellate Judge, each appellant and each appellee must have one microphone. A microphone must also be placed at the podium, at the court clerk’s station and at any presentation area.

F. The Record and Transcription

The digital recording can be transmitted to the transcriptionist by CD/DVD, tape, via the Internet or the court's computer network, or even by using a USB drive.

1. Written Transcription Standards:

- The transcript and notes should be provided in PDF format along with an ASCII file enabling the user to use transcript analysis software.
- Courts must establish policies regarding a digital transcript signature that cover:
 - The degree of authentication of digital signature³⁶
 - Whether an electronic image of a signature will suffice (as it does in federal court)
 - If multiple transcribers produce portions of the transcript, whether each transcriber must sign, or, whether an authorized representative of the transcribers' agency may sign
- In that the ASCII file can be changed, the court should always rely on the PDF version of the transcript or the transcriber's electronic transcript, with appropriate signature.
- Strong consideration should be given to requiring the International Standards Organization PDF/A format adopted by the US Federal Courts.³⁷ The ISO PDF/A-3³⁸ standard could allow for the original digital audio record to be included as an embedded attachment with the transcript document.
- Consideration should be given to systems that enable audio to be transmitted directly to transcribers via an encrypted internet connection. This eases transmission and access and also, when needed, enables recordings to be transmitted while court is in session to a remote transcriber, enabling the production of a same day transcript.
- Consideration should be given to the e-filing of transcripts.

2. Search Features for the Record and the Transcript:

- The transcript system must allow for field searches including name, case number, case ID, time and date of the record, court department, location, and any other information used to classify the case. This data may be embedded in the document as meta-data or connected to an external database system. The digital transcript must also allow for a key word index and enable any person to find all pages on which the word appears. It should also allow for text and proximity

³⁶ http://en.wikipedia.org/wiki/Digital_signature

³⁷ <http://www.pacer.gov/announcements/general/pdfa.html>

³⁸ <http://www.digitalpreservation.gov/formats/fdd/fdd000360.shtml>

searching in the document as well as “Soundex” (for example “Dylan” would also return entries for “Dillon”) for both the data fields and document text.

3. Transcription Software:

- The system should be able to add and display additional notes and events to both the audio/video recording following the initial capture in order to create a more useful record.
- The system should enable transcribers to work independently or collaboratively on producing a transcript of the same day of court to enable flexibility in producing rapid turnaround or delayed transcript. Recorded material must be able to be extracted for transmission to the transcriber. Consideration should also be given to the system’s ability to enable transcribers to work remotely from the courthouse both for delayed and live/simultaneous transcript production.
- The system should enable the transcript to be connected to the digital recording to allow the reviewers to be able to play the audio by selecting the text or markers in the transcript. It should also enable digitized exhibits to be linked and displayed upon request from the transcript.
- The system must allow the transcriber to select one or more channels to isolate speakers and to allow for volume control per channel.

4. Transcription Hardware:

- Transcription hardware should include a Universal Serial Bus (USB) connected foot pedal that assists the transcribers to control the record, enabling them greater ease to navigate the record while they transcribe and type with their hands.
- High quality, comfortable headphones are also recommended. The audio playback part of system must be able to be calibrated to eliminate sharp spikes in sound to prevent acoustic shock.

5. Public Access Format Standards:

- WMA (Windows Media Audio) should be the digital audio file standard for public access. WMV (Windows Media Video) should be the standard for video. If notes are provided, it is recommended that they should be embedded in the accompanying PDF/A-2 document.

6. Digital Rights Management:

- DRM (Digital Rights Management) file protection (via encryption) is not recommended at this time for transcripts because of cost; however, if costs are reduced, then courts should explore possible application of this technology to control the use of the record.

7. Online Payment Systems:

- A commercially available third-party payment solution should be used, particularly when payments are made to the court and not directly to the transcriber. Proprietary offerings should be avoided.

8. Media for the Record:

- The system should support any digital media, as court requirements vary. DVD/CD usage is somewhat problematic as these media are prone to physical issues – scratches. Therefore courts should also consider the use of solid state drives including USB “thumb drives” as storage and distribution media.
- Another option is to provide controlled online streaming of the digital file as access can be controlled by time and user identification. This option also allows the court to immediately remove or revoke access to the file if needed.

9. Integration with the Court Case Management System:

- CMS integration can significantly reduce data entry (notes), and enhance audio search and retrieval. However, it should be noted that such integration requires both technology and business process planning, project management and project management implementation controls to be successful. For those courts that contract with a vendor to provide and enhance their CMS, it also requires ongoing vendor cooperation.

G. Facilities Design Recommendations

1. Acoustical Mapping Software:

- It is recommended that acoustic mapping of new and existing courtrooms be performed particularly during the design process in order to reduce the occurrence of facilities that are inadequate for capturing the audio record. Three measures in particular that are useful are the noise criteria (NC) level for background noise, Reverberation time (T_a) and Mean Sound Absorption Coefficient ($\lambda_{m\lambda m}$).
- Acoustical mapping software reports for existing or new courtrooms should be included with the system acquisition documentation in order for the vendors to bid and provide the best possible solution for the courts.
- The acoustic mapping software results should be interpreted by competent, professional audio specialists to help guide decisions toward equipment or installation decisions. Unless the court has personnel with that knowledge and with those skills, it would be advantageous to include the analysis by acoustic mapping software as a mandatory part of the design and installation. The reviewer’s report should be reflected in the court’s system acquisition documentation. For example, acoustical mapping software might define ambient areas of a courtroom. Therefore the report output might lead a court or acoustical

consultant to define the need for zoned speakers of a particular type to be installed into specific locations.

2. Ambient Noise:

- The maximum level of ambient noise recommended is NC (Noise Criteria) 35 based upon research funded by the Ford Foundation and published in *The American Courthouse*.³⁹ It is recommended that ambient noise is measured because it is extremely helpful in not only measuring the noise, but also for recommendations about possible problems in recording and early planning to avoid significant problems for recording, including potential addition of sound absorbers in the room. The recommended Reverberation time (T_a) is $0.4 < T_a < 0.5$ and the recommended Mean Sound Absorption Coefficient (λ_m) is greater than 0.25.

³⁹ The Ford Foundation, *The American Courthouse: Planning and Design for the Judicial Process* (Michigan: Edward Brothers, 1973), 189.

Appendix A: More on Microphones

Manufacturers make high quality microphones, many of which are designed for specific purposes. Generally speaking, quality microphones can be equipped with a capture range or pickup area from 360° (omni-directional) through to around 10° or 15° (uni-directional).

Omni directional microphones should be used sparingly in courtroom settings because their 360° pickup pattern tends to defeat the capture of an isolated speaker per microphone that is being sought by using a multi-channel recording system. In other words, omni-directional microphones turn a sophisticated multi-channel recording system into a mono recording system where all voices are captured to all channels. Verbatim transcribers need to be able to isolate on an individual speaker to determine what that individual said without interference from other speakers, bumps, knocks, buzzing lights, air handler noises, etc. Uni-directional microphones are designed to pick up only what is in front of them. Uni-directional microphones provide isolation and support one speaker captured per individual recording channel. Omni directional microphones can be used in some areas in which a speaker tends to move while speaking such as a whiteboard, court well or video presentation area. It is worth noting that music and movie studios exclusively use uni-directional microphones to capture vocals. Of uni-directional microphones, the cardioid (heart shaped) is the most common.

There are multiple microphone technologies available, including Dynamic microphones and Condenser microphones. Microphones should be tested in each courtroom in order to determine the right technology for each situation before choosing the microphone for a particular court's use.

Appendix B: The Future of Speech Recognition Technology

There is certainly a movement towards transcription utilizing speech recognition software, and we see that becoming a key component of the judicial process soon. Speech recognition may play a part in transcription in the next five years. Computers do not currently have the processing power and the computational/programming capability to utilize speech recognition in the courtroom. Computers do not have the processing power and the computational/programming capability to achieve on-the-fly accuracy (95% or above) of producing text automatically generated from a multi-speaking environment such as a court. Currently, speech to text can achieve about 95% accuracy once the speech recognition software is “trained” to understand an individual speaker. As often as not, the speaker is being trained to articulate and maintain a pace as much as the software is being trained.

That said, total adoption of that technology is not likely within the next ten to twenty years. Accuracy is the main challenge for speech recognition software, and without 100% certainty, it will still be a liability in the judicial sector. Multiple speakers need to be able to be identified. Multiple audio qualities need to be accounted for across different microphones, varying acoustic environments (particularly where participants move away from microphones). While speech to text may within the next few years become useful in the mining and search of audio and video content for specific sections of recordings, it is not likely that courts will become totally reliant on speech recognition technology in the near future.

Appendix C: Remote Monitoring of Courtroom Proceedings

In some states and counties, a single person monitors the recordings in multiple courtrooms within the courthouse.

The focus of this report is the monitoring of courtroom proceedings by a single person physically located in a single courtroom performing functions to make the record and to assist during trial in ways similar to the work traditionally performed by the stenographic reporter.

Remote monitoring requires that courts address technology standards and courtroom monitor procedures not covered by this report.

Appendix D: Vendor Related Issues

Steps to Take:

- **Choosing a Vendor: Before Signing a Contract:**
 - Check references and if possible perform on-site visits to existing installations of similar size. Court record vendors should have very specific experience in the judicial sector because of the unique requirements and added importance of the record. Vendors should be focused on the court sector, and have a history of success integrating and implementing systems in courthouses. The vendor should be an experienced integrator/value added reseller.
 - Require potential vendors to provide a project plan with good-faith estimates of the amount of time it will take to complete the project, with milestones from the date of contract signing through installation and training.
 - Require potential vendors to provide a list of tasks, infrastructure, or purchases the vendor expects from the court in order to be able to install the system at a court location.
 - Require potential vendors to provide pilot systems so that end users can Judge which system is more effective.
 - Pilot programs with vendors are recommended in order to identify the strengths and weaknesses of the digital recording system, and also for vendors to be able to recommend customized recommendations based on the pilot program. The pilot program helps to identify additional recommendations for acquisition.
 - Warranties and service and the long term cost of ownership:
 - Courts should receive a specific date range warranty as part of the acquisition process and have the ability to contract for maintenance. The costs and specifics (such as call-in help desk, response times, and software upgrades, etc.) of these services should be disclosed during the acquisition process.
 - Courts should consider the costs and availability of service and support. The total cost of ownership must be considered during acquisition, including the cost of down time.
 - Ask potential vendors whether recordings will be playable on a new vendor's software, i.e. how content can be accessed if and when the court changes vendors.
- **Choosing a Vendor: Before signing off on the Installation:**
 - Courts should consider and define the operational aspects of the solution prior to implementation.
 - Walk room by room to confirm audio and recording capture before signing off on the installation.

- Training:
 - Vendors should provide training materials and onsite startup training for monitors, Judges, court staff and attorneys as well as for local system administrators. The training should cover all software applications related to the digital recording system, and use of the recording system by staff and judges.

Appendix E: The AAERT Code of Professional Ethics

The American Association of Electronic Reporters & Transcribers Code of Professional Ethics

I. Conduct

- Always conduct yourself in a manner reflecting the highest integrity of the electronic reporting and transcribing profession. Be fair and impartial toward each participant in a proceeding. Be truthful and accurate at all times.
- Be respectful of Judges, commissioners, attorneys, witnesses, clerks, members of official organizations, and all others associated with your assigned proceeding.
- Be alert to situations that may present the possibility of conflicts of interest. Guard against not only the fact, but the appearance of impropriety.
- Avoid giving or receiving any gift, incentive, or reward of substance to or from attorneys, clients, witnesses, or any persons associated with the proceedings, other than businesslike payment for professional services rendered.
- Determine fees independently, except when established by statute or court order.
- Prepare the record in accordance with the transcript-preparation guidelines established by statute or court order, or, if not applicable, then by local custom and usage.
- Preserve the notes and tapes of the record in accordance with statute or court order, or for a period of no less than three years, through storage of the original paper notes and tapes, as well as a paper or computer disk version of the verbatim transcript.
- Meet promised delivery dates. Make timely delivery of transcripts when no date is specified, and provide immediate notification of delays, and truthful assessment to client of reasons why.
- Do not offer counsel, advice, or personal opinions.
- Know your software and hardware system and be able to do simple troubleshooting.

II. Confidentiality

- Preserve the confidentiality and ensure the security of information, oral or written. Do not discuss remarks heard on or off the record with anyone. Keep all assignments strictly confidential.
- In instances of transcripts that are not intended for public distribution, do not make public any part of the proceeding.
- Do not disclose any transcription ordering or other information that is provided by one party to anyone else without express permission of that party. When in doubt, decline to discuss anyone's special ordering or delivery arrangements.
- Strive to be helpful to all parties if they express a need, but do not orally communicate any substance of the proceedings to any party or non-party.

III. Commitment

- Strive to become and remain proficient in electronic court reporting and/or transcribing professional skills.
- Keep abreast of current literature, technological advances and developments, and participate in continuing education programs. Strive to further knowledge and skill through participation in workshops, professional meetings, and interaction with colleagues.
- Assist in improving the electronic reporting profession by participating in national, state, and local association activities that advance the quality and standards of the reporting profession.
- Cooperate with the Bench and Bar in improvement of the administration of justice.

Appendix F: Log Note Entries

Suggested Log Note Entries for Proceedings Requiring Transcription

- a. Date
- b. Courthouse
- c. Courtroom
- d. Reporter
- e. Case Number
- f. Case Name
- g. Judge
- h. Attorneys (contact information)
- i. Type of hearing
- j. Clerk
- k. Bailiff
- l. Call to order
- m. Opening Statement
- n. Witness name
- o. Witness called
- p. Witness excused
- q. Objections
- r. Court's ruling on objection
- s. Q or A resumes
- t. Change of speaker
- u. Jury Entering
- v. Jury Exiting
- w. Addresses
- x. Key words (spellings)
- y. Proper nouns (spellings)
- z. Exhibits
 - i. Marked
 - ii. Identified
 - iii. Introduced
 - iv. Admitted
- aa. Recess
- bb. Court Resumes
- cc. If any participant exits
- dd. Direct Examination
- ee. Redirect Examination
- ff. Cross Examination
- gg. Recross Examination

- hh. Rebuttal
- ii. Surrebuttal
- jj. Colloquy
- kk. Return to Examination
- ll. Voir Dire
 - i. Change of juror
 - ii. Change of attorney
- mm. Judge
- nn. On the record
- oo. Off the record
- pp. Commence Judge's ruling
- qq. Closing argument
- rr. Jury Instructions
- ss. Verdict
- tt. Adjournment
- uu. Non-verbal response
- vv. Uh-huh/Huh-uh
- ww. Request for playback of testimony
- xx. Playback
- yy. Bench Conference
 - i. On the record
 - ii. Off the record
 - iii. Bench conference begins
 - iv. Bench conference ends

Appendix G: Appearance/Information Sheet

Date:

Venue:

Courtroom:

Judge:

Reporter/Monitor:

Case Name:

Plaintiff/Petitioner
vs.
Defendant/Respondent

Case Number:

Type of Hearing:

Appearances:

Plaintiff/Petitioner	Defendant/Respondent
Name:	Name:
Firm:	Firm:
Address:	Address:
City:	City:
State/Zip:	State/Zip:
Email:	Email:
Business Phone:	Business Phone:
Mobile Phone:	Mobile Phone:

Microphone/Channel Assignments:

#1A:	#2A:	#1B:	#2B:
#3A:	#4A:	#3B:	#4B:
Judge:	Witness:	Clerk:	Jury:
Pltf Atty:	Deft Atty:	Jury:	Podium:

Notes:

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Case Number:

Date:

Witnesses

Plaintiff/Petitioner:

Name	Direct	Cross	Redirect	Recross	Judge

Defendant/Respondent:

Name	Direct	Cross	Redirect	Recross	Judge

Exhibits

Plaintiff/Petitioner:

Exhibit Number	Description	Marked	Identified	Introduced	Admitted

Defendant/Respondent:

Exhibit Number	Description	Marked	Identified	Introduced	Admitted