

## The High Tech Courtroom

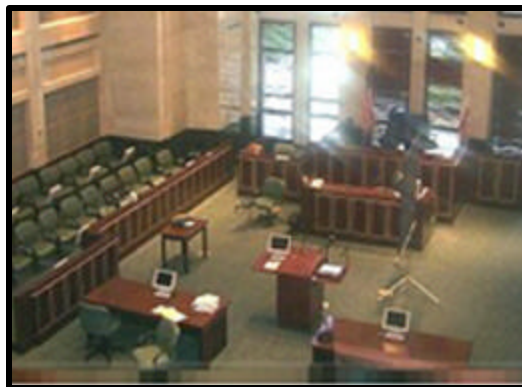
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Judicious implementation of advanced legal technologies has enhanced the court's ability to meet the needs of the public it serves, while preserving the dignity and fairness of the proceedings. This paper provides an overview of the technologies and issues involved in designing and implementing an effective "High Tech Courtroom". It is based upon recent experiences in the development of a number of projects, primarily the U.S. District Court - Northern District of Ohio, the District of Oregon, the District of Puerto Rico, as well as design of the State Courts in New York and Orlando, Fl. Successful educational courtroom facilities, such as Courtroom 21 at the William and Mary Law School in Virginia, and the newly opened National Advocacy Center, have contributed to this body of knowledge as well. The concept of the high tech courtroom, and the observations presented here, represent an evolution of thought. They are a "snapshot" in time, to help explore current justice technologies and future visions.



U.S. District Court, Cleveland



9<sup>th</sup> Judicial Circuit (Courtroom 23) Orlando, Florida



U.S. District Court, Portland, Oregon



Courtroom 21, William and Mary Law School

The High Tech Courtroom provides an integrated and multi-disciplined environment to assist in the fact finding endeavor. Using advanced telecommunications, it breaks through traditional 'walled' boundaries of a courtroom, expanding the judicial forum beyond the limits of physical space. While attention is most often given to the evidence presentation and videoconferencing features of the high tech courtroom, these are merely components of a meticulously engineered "information architecture" that boasts both intra and inter information capabilities.

The key to making these various technologies work is directly related to ease of use and seamless systems integration. This is actually quite a challenge, given the wide range of court functions and technology skills of the trial participants. The 'modern' courtroom must serve the needs of the judge, courtroom deputy, court reporter, witness, attorneys, bailiff, judge's clerk and even the jury! Intricate knowledge of the court's unique needs and traditions are crucial to the design process. Of equal importance from an 'end user' standpoint, is the investment of time and money by the courts and members of the profession in proper training and utilization at trial.

The courtroom presentation system facilitates the trial process. It does not, in any way, provide evidence content. This assumption is fundamental to the practical implementation of a 'high tech' courtroom. Content, as well as the attorney's personal laptop, are the responsibility of counsel, and should be handled in a manner similar to the attorney's exhibit boards or models. This responsibility should not be assumed by the court. Contradicting this approach could expose the court to a myriad of unnecessary procedural and support problems.

### Exploring the Major Components of the High-Tech Courtroom

#### **Evidence Presentation**

A typical evidence presentation system includes an evidence or document camera for physical material, a connection for attorneys' (and possibly judge's and witness's) computers, an illustration device or pen and the ability to create a hardcopy of whatever is being displayed to the jury. Different types of playback devices are often included, such as a VCR and audio cassette deck. A DVD player is another device that may be added in the near future.



When integrated into a single stand alone unit, such as DEPS™ (Digital Evidence Presentation System,) the system serves as the ‘control center’ for all video and digital display in the courtroom.

## Courtroom Display

The current jury pool is increasingly composed of generation ‘X’ (and ‘Y’) jurors, whose learning style is centered around television and computer generated information. As such, justice engineers have adapted court design to support the full range of media exhibit options available today.

Individualized, high-resolution flat panel monitors create a comfortable, easy viewing experience for jurors. For remote testimony, a high definition plasma screen anchors the remote witness to the traditional jury box. Roll-about large screen televisions for videoconferencing provides a less expensive viewing alternative.



U.S. District Court, Cleveland, Ohio

## Videoconferencing

Videoconferencing provides the ability for remote participants to be involved in courtroom procedures. At the same time, it places a significant design premium on *how* the conferencing system is implemented. One would want all parts of the proceedings, i.e., video display of participants, evidence, real time and any visual material to be displayed to the “far” or other end of the videoconference. Operation should be seamless and easily executed. Issues of audio inputs and amplification in the courtroom must be addressed, as well as problems of echo cancellation and feedback. Videoconferencing is a paradigm of some of the most basic issues of courtroom integration. Because we are attempting to “replicate” the courtroom to an outside party, *all of the visceral and visual aspects* of the courtroom experience must be conveyed as simply and effectively as possible. For this reason, it is best to employ a ‘hub’ based system to deliver court wide access and transparent integration into the courtroom. Standard ‘roll about’ units are limited in their ability to transmit an experience of similar quality.



Portable VTC Solution Delivered to US Court of Appeals – San Francisco, CA

Videoconferencing offers a practical alternative to the risk associated with transport of unruly jailed defendants. It offers comfort and security outside of the courtroom to frightened juvenile witnesses, and a timesaving alternative for expert testimony. A comprehensive courtroom system supports simultaneous transmission to multiple remote sites. It provides high-speed data transfer to multiple courtrooms, conference rooms, the judges chamber and training locations. Recent adaptation of CAT5 twisted pair technologies for court videoconferencing systems provides an economical solution to the costly, difficult installations of the not to distant past.

## The Record

Real time court reporting offers the most efficient solution for preservation of the record during complex, or lengthy criminal litigation. Data is broadcast to the judge, witness and attorney tables via cat5



Clerk's Work Area, U.S. District Court, Cleveland

transmission cabling, and easy connecting RJ45 telephone jacks. This format is compatible with any of the currently available transcription packages. Some courts require the display of the “dirty copy” of the record on courtroom monitors in anticipation of potential ADA situations. Sophisticated indexing of the is critical for quick access to relevant testimony and evidence. Gateway technology to broadcast proceedings over the internet should also be considered to facilitate broader access to important cases.

Alternative record making options include digital audio and video recording systems. These methods use microphones and cameras to electronically capture testimony and courtroom activities and record them onto a digital media. Perhaps the newest record making option is court reporter controlled voice recognition. A Stenomask Reporter dictates the testimony into a computer, which converts the person's voice into text and displays it, much like stenotype reporter's real-time transcription.

## Audio Enhancement

Audio in the courtroom, tends to be ignored. This is a grave error. Careful audio design and implementation is critical for the delivery of consistent, high quality sound for uniform communication among *all* trial participants. Special consideration must be given to optimized sound for the ‘virtual witness’, such as an appearance via videoconferencing, where echo cancellation is often a problem. It may be necessary to create a complete audio and video record, with language interpretation, that complies with ADA standards for hearing impairment. “Room-based” audio



enhancement and the need to integrate the court reporter into the audio distribution is required. Audio in essence, is key to the design foundation of the modern courtroom.

## Data Access

Access to in-court and external sources of data needs to be considered as part of the initial design process. This is both a technical and policy issue. For example, does the court provide Internet access at counsel tables? The pathways for data (voice and ISDN grade access) and network connectivity should be considered for the judge, counsel and court staff. At a minimum, the judge should have access to case and docket information (along with the deputy). From a design perspective, the pathways count. This applies to voice/phone access as well.

## Gallery/Public

It is important to consider what the gallery and press will have access to from the electronic information base of the courtroom. It is interesting to note that before the advent of electronic trials the only media concerns involved camera placement and finding an available seat for an artist or reporter. With the advent of electronic trials, the discussion of access has become more complex and requires policy and design consideration.

## Control

Control is a critical issue to the judiciary. In reality, old rules seem to apply from an evidentiary perspective at trial (as observed by the Judges panel at the recent Courtroom 21 Forum on Technology, held in conjunction with the NCSC in Williamsburg, September 1998), but technical control is still important. This includes a “judge kill switch” for video and audio evidence display (again, one must consider the videoconference and record-creation part of this design) as well as overall control interfaces for inputs, display, playback, etc. A *single* programmable interface with multilevel access and security features maximizes ease of use and seamless operation of all systems.



Control System Main Screen – Boston, MA

## Furniture

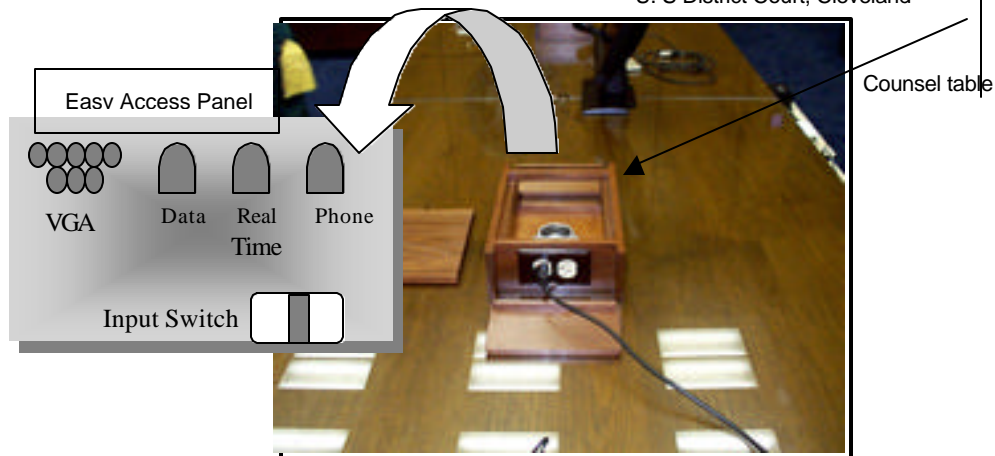
This may seem strange to some people, but technology places a burden on furniture functionality and design. These considerations are even further complicated in retrofit design situations. Issues of lines of sight and hiding unsightly and disturbing cables are readily apparent. Consideration should be given to maximum design flexibility in anticipation of future technology upgrades.

For example, jury rails modified a number of years ago to accommodate full size monitors, become unsightly shelving with the advent of flat panel jury monitors.

## Adapting Furniture to the Technology Needs of the Courtroom

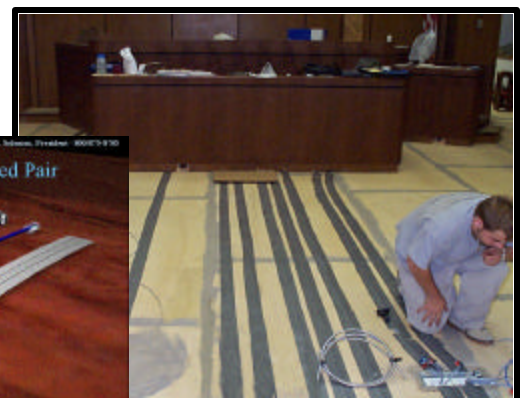
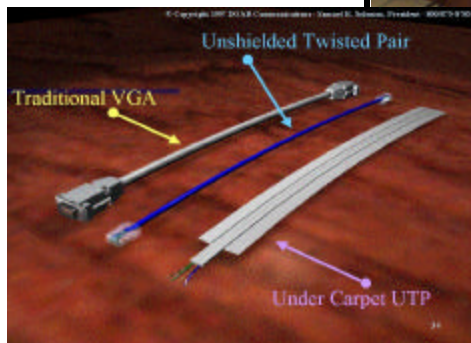


Millwork Integrated Electronics  
U. S District Court, Cleveland



## Infrastructure

Infrastructure design for new and existing facilities has been a major challenge over the years. No matter how wide the conduit, there never seems to be enough room! The issue here is two-fold, relative to the rapid increase in the number of required connections, (and hence, cables,) as well as the need for different kinds of cables to support multiple technologies, such as audio, data, video, etc. In the



Under Carpet CAT5 Infrastructure Installation

past this often resulted in infrastructure design that was antiquated minutes after installation. There are two options currently available to resolve this issue. The first is to construct “raised floor” court wells. This is a misguided approach however, as it is better to sink the well and make it level with the rest of the room. A second approach is to adopt a universal cabling standard (UCS) for all infrastructure. This is especially

important in existing facilities. Category 5 (CAT5) network cabling supports this universal interface combined with electric cabling. Over a single type of cable, one can transmit audio, video, data, real-time, high-resolution computer output and even electrical power. There are also implementations for “under carpet” Cat 5 for retrofit courtroom applications, which avoids costly building construction.

## **Issues for Further Consideration**

### **Training and Education**

Education is critical to the successful implementation and use of a High Tech Courtroom. Training needs to accommodate the different constituencies’ requirements and levels of sophistication. Interactive multimedia training, videotapes and hands-on “mock trial” simulations seem to work best. Recognizing the importance of practical technology experience, the author, in collaboration with the National Institute for Trial Advocacy (NITA) presented ‘Working with Courtroom Technology’ This ‘first of its kind’ program integrated NITA’s traditional expertise in advocacy and jury presentation skills development with cutting edge technology, to enormously enhance trial presentation and argument. Participants had an opportunity to explore the full persuasive potential of multimedia evidence presentation.

Similarly, the recently opened National Advocacy Center, in South Carolina houses 10 mock courtrooms, equipped the most advanced portable DEPS systems currently available. Law firms, law schools, and organizations such as the National White Collar Crime Institute are actively planning the installation of fully integrated mock courtrooms for education and training. Proficiency in the use of legal technology has become the new standard for advocacy in the American Courtroom.

### **Preservation of Evidence**

As more cases become purely electronic, the issue of record preservation will become a greater design consideration. Electronic record preservation evokes intriguing policy and practice issues relative to direct access by the jury during deliberation, as well as for electronic packaging of the appellate record. This will ultimately create a need to revisit the underlying design assumptions of the High Tech Courtroom. We should consider implementing the entire environment as a systems and information architecture rather than the “display-push” environment, as it is currently implemented throughout the U.S. The non-U.S. models at The Hague and Australia may be of increasing interest..

This overview represents the current “state of the art” for the High Tech courtroom. A most notable example of the successful implementation of these advanced technologies is the U.S. District Court – Northern District of Ohio in Cleveland. The Cleveland Courthouse represents the successful marriage of technology and the American justice system. It offers practical solutions to the challenges of increasing caseloads and decreasing financial resources. The effectiveness of integrated high tech courtrooms is being proven every day, in courtrooms across the country. Lessons learned from current implementations help build our model for future projects. These are wonderful times for technology augmented courtrooms. As we push the envelope, refine design ideas and use these systems to make justice more accessible, we will reduce litigation time and provide an environment which meets the needs of today’s media savvy participants.

About the author:

Samuel H. Solomon is President and Chief Executive Officer of DOAR Communications in Rockville Centre, NY. DOAR Communications is the nation's leading provider of innovative, practical litigation technology solutions toward the enhancement of the American Justice System. DOAR services include integrated courtroom systems, litigation support services, and leading edge technology applications. DOAR acts as a “design-build” consulting and technology firm. The firm’s most recent High Tech Courtroom, the Federal Court, Judge O’Malley, in Cleveland, Ohio, features the breath of the issues described in this article. Mr. Solomon speaks and writes on the topic of courtroom technology design and presentation strategies for complex litigation.

Mr. Martin Gruen is President and founder of Applied Legal Technologies, having more than 25 years experience providing audio and video systems to the legal community. Mr. Gruen also serves as the Associate Technologist for Audio, Video and Infrastructure for Courtroom 21, the world’s most technologically advanced courtroom, located in Williamsburg, Virginia. He began his career in legal technology design and installation in 1974. Initially concentrating in the areas of sound re-enforcement and audio recording at the local, county, state and federal level, Mr. Gruen has emerged as a national expert in courtroom audio, video and related high technology legal uses. Mr. Gruen has lectured on court technology for organizations such as the National Center for State Courts, the American Institute for Architects (AIA), the National Court Reporters Association and the American Bar Association.

Applied Legal Technologies is an internationally recognized court technology design firm with offices in Williamsburg, Virginia. Recent technology projects include the 9<sup>th</sup> Judicial Circuit High Technology Courtroom (Roger A. Baker Courtroom) in Orlando Florida and the U.S. District Courts in Cleveland, Ohio and in San Juan Puerto Rico.