

ICT in Indian Court

Challenges & Solution

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Abstract - Over three million cases are pending in India's 21 High Courts and an astounding 26.3 million cases are pending in subordinate Courts across the country & only 14.7 Judges available per million people. With further growth in the number of cases increased the burden on our judicial system manifold. The cost and inefficiency of dealing with records has crept up slowly over time and become extremely unwieldy, inefficient and cumbersome. On the other hand if we see the efforts of the other investigating agencies like police, jails, forensic labs, hospitals etc in extracting information from accused, undertrials & evidences etc is enormous and extremely complex. Massive cost, time and risk are involved in bringing the accused, witnesses, reports etc to the courts. India is on the verge of technology revolution that enables law agencies to manage the case proceeding in electronic format, leading over paper-centric judicial scenario. This has also given birth to this new idea; adjudication through e-courts.

MoU has been signed among TIFAC (DST, Govt. of India), CDAC Noida and Gujarat & Delhi High Courts respectively under TIFAC's targeted programme: TECHNOLOGY VISION 2020 "Synergizing Science & Technology with Judicial Processes" to develop a state-of-the-art tamperproof & secured case recording & retrieval system which has been successfully piloted at City Civil and Session Court, Ahmadabad and the advanced version of this is recently implemented at Karkardooma District Court New Delhi.

I. INTRODUCTION

The rapid accumulation & slow disposal rate of pending cases has increased burden on our judicial system tremendously. Courts had to maintain all the records in physical manner i.e. either in files or registers and to keep such large data in paper form is not easy to retrieve and also not even safe and is prone to physical tempering & environmental degradation. The case takes long time to solve and apart from this Cases/Judges/Courts keeps on changing during the course of judgment. Even the witnesses and accused keep on changing their statements and turns hostile. It is always difficult for the new Judges to retrieve the case information & status; so far the available source is the written information in the case files only. As far as police & jails are concern, they already cramped for resources in dealing and bringing accused and undertrials to the courts. Similarly experts from Hospitals and forensic labs faced severe difficulties in presenting their investigating reports in front of courts. Therefore, there is a definite scope of bringing ICT to help and develop Case Record Management System for courtroom and to conserve the case file & audio/visual record for future references.

II. SYSTEM FEATURES

The entire courtroom proceeding are videographed using multiple high resolution PTZ cameras. The control of recording software interface is on the hand of judge who can start/stop anytime. File records, evidences (knife, gun etc) and other case related documents(depositions, notes, files, summons, orders etc) has been scanned and digitized via scanners and visualizers and are available to authorized users like judge, lawyers and public prosecutor etc for reviewing. Deposition can be captured as dictated by the judge at the time of case hearing, which is also linking with video records. Adequate security features through data encryption, digital signature, Network and application level have been provided to safeguard information from both unauthorized viewing and intentional or inadvertent damage. The system provides a flexible retrieval of captured information and allows the user to specify partial search terms involving the document identifier and/or parts of the expected metadata. System is integrated with video conferencing system with other locations over broadband IP or ISDN network. These locations can be police stations, jail, FSL, hospitals etc. This is a great advantage as both precious time and cost is getting saved and it is much safer too.

This system has following features:

- Role based access to authorized users
- Uploading the scanned files/evidence and adding appropriate metadata.
- Allows Judges to see recording of proceeding for review and why case was rescheduled last time..
- Making the knowledge and information content available in 24x7 online environments.
- Appropriate Searching of case records.
- Provision to provide case CD/DVD to authorized person.
- Provision for taking record backup at a specified backup site.
- Live webcast of case proceedings through web portal.
- Can be use by court reporters that missed a word or statement.

III. SYSTEM WORKING OVERVIEW

The system application is broadly categorize in four major privileges areas inter- linked with courtroom operations. They are Judge, Administrator, Courtroom staff (Steno, Almad, Reader etc) and other users (like Public prosecutor, lawyers). Application features are made available as per there functions and defined roles and responsibilities. Some of the major tasks of the entire workflow are explained below.

Digitization of Case files:

A scanning room has been created inside the courtroom where case files are brought first. The case files are then scanned & digitized and uploaded in encrypted form on centralized storage server so that authorized person can access the case files through the software interface. In earlier system, bringing the case files from store room (Maal khana) take lots of efforts which can be saved now. Here authorized user can access the case files from anywhere on a single click.

Paperless Deposition:

The proceedings of court are completely paperless. The deposition is typed by steno on computer and the draft deposition is visible to the Judge and to the lawyers on their screen. Once the draft is approved, the deposition is then digitally signed by Judge. This file is then uploaded & gets appended in to the case file.

Recording of court proceedings:

The court proceedings can be recorded with multiple high quality PTZ camera through interface

provided to Judge. The recordings are also kept in encrypted form on server. The user can access these recordings from the software interface which makes the user (Judge) flashback easily that what happened last time in this case and easily track the progress of the case.

Video conferencing:

Using video conferencing any person can give his/her deposition from remote place. He/she just needs a video conferencing setup either hardware or software based with internet connection. Initially three hospitals, FSL, two police stations and jail are connected to e-Court for video conferencing. Producing accused/witness every time in court consumes enormous amount of resources (transportation cost, security time and manpower etc) of the government, Using Video conferencing, they can give their deposition from hospitals and jails itself.

Evidences capture:

We provided imaging solutions for evidences and documents to court. The images from police, hospitals reports etc. can be uploaded from camera or any other imaging source. There is one visualizer to view & capture evidences and indexed with the in court case records.

Provision for DVD writing:

If any person (lawyer or concerned person) wants digital documents or videos of case, there is provision of providing required data on a CD/DVD.

Data sharing from remote location:

The police, hospital staff can remotely upload the documents or view the documents.

Court live proceedings:

The court's live proceedings can be seen on courts website by authorized person. If any person (lawyer or concerned person) wants to see live proceedings, he/she has to fill an online Registration form and after reviewing the application by administrator, access can be given to person for the particular case.

IV. TRADITIONAL SYSTEM VS e-COURT

When we think about judicial courts all that comes to our mind is thick files, hot arguments between lawyers and heated discussions. The judge can view the recordings and related documents of a particular case on just a click of a button. As a result of which both the judge and the lawyers need not to waste their time in finding a particular part in those documents (video or PDF) and can come directly to the point. Since every case is recorded the judge can review the earlier

recordings to refresh his memory. Hence helping the judge, to give a quicker and correct judgment.

Traditional Functioning	e-Court Functioning
Physical carrying of Case File and evidences to Courtroom at each hearing.	No need to carry Case File and evidences at each hearing in physical form, same are available at click of mouse to Judge and concerned staff. Reduces the human load on the court premises also ease the maintenance of evidences and documents. Court authorities can avoid frequent physical movement of case related files and evidences
Physical carrying of Case Documents and evidences if required by Judge, Judicial Secretary for review.	
No provision of sharing case information online.	Different courts are able to share the information online.
Required Case documents and evidences of Case file are submitted manually in Court by Police, Hospital, Forensic Officials and other stake holders.	Through e-Court concerned Police, Hospital, Forensic Officials and other stake holders can upload the required documents to the case file from their premises itself. System provides adequate security mechanism like role based user access.
Case cannot be proceed due to the non availability of accuse/witness on the scheduled date and case delays many years for final hiring.	With the help of video conference facility accuse/witness can participate in court room proceeding.

V. COST BENEFIT ANALYSIS

The following data is approximate and value is based on the available recording done at e- court in H.264 (4CIF) format.

S No	Channel	Data (MB/Min)	Total (MB/Hr)
1.	Judge View	1.85	111

2.	Accused View	1.65	99
3.	Witness View	2.05	123
4.	Mix Quad View	2.25	135
5.	Video Conf.	1.22	75
6.	Evidence View	0.55	33
7.	Operator View	1.60	96
TOTAL			672 = ~700

Average Calculation:

- ☞ Per day court runs for 7 hrs therefore $700 \times 7 = 4900 \text{ MB} = \sim 5\text{GB/day}$
- ☞ $22 \text{ days/month} = 5\text{GB} \times 22 = 110\text{GB/Month} \times 10$ (courts works for 10 months/year) = **1.1 TB/Year**

The following data is approximate and value is based on the available digitization done at e-Court for single case in .pdf format.

S No	Doc. Type	Data (KB/page)	Avg page/Case	Total (MB/Case)
1.	Case File	250	600	150
2.	Case/Evidence pics	3000	25	75
3.	Deposition/ord ers etc	100	100	10
Total			725	235

Average Calculation:

- ☞ Average Case handled by one court = $75/\text{Year} = 235 \text{ MB} \times 75 = 17.625 \text{ GB} = \sim 18\text{GB/Year}$
- ☞ Average files generated = $725 \times 75 = 54375 = \sim 55,000 \text{ files/Year}$
- ☞ Traditional Court maintenance cost approx Rs 8 Lacs 40 thousand annually.
- ☞ Capacity of the Server is 2TB. On an average a Court consumes 1.3 TB of data annually for both video and document.
- ☞ e-Court Server maintenance & capacity enhancement cost is approx Rs 1.5 Lacs annually.

Study at Lal Bahadur Shastri Hospital

- ☞ On an average 10-12 Doctors travel to court daily from each Hospital
- ☞ Average DA/day/head = 350 Rupees
- ☞ Average TA/day/head = 100 Rupees
- ☞ Average per day cost = $450 \times 12 = 5400/- \text{ per day}$

- ☞ *Average Monthly expenditure = 118000/-*
- ☞ *Average Annual expenditure = Over 14 Lakhs per Hospital*
- ☞ *Above cost does not include the salary part.*
- ☞ *Cost of patient care loss: ∞ INFINITY*
- ☞ *Travel and other related cost will be saved.*
- ☞ Support of other staff members involved in summon distribution, document gathering, logistic arrangements is not included in above study.

Study on Tihar Jail

- ☞ Approx 1,200 inmates taken to courts every day, at least 400 are under trials only seeking an extension of judicial remand.
- ☞ Jail vans have to make at least 10 trips to transport the under trials to court.
- ☞ We would save up to rupee 1.5 crore annually, the amount we spend on providing security and fuel.
- ☞ Earlier system costs around **20 Thousand Rupees per case** but using e-Court only **3 Thousand rupees spends per case**. We can save approx. 17 thousand rupees per case

VI. OUTCOME OF THE e-COURT

The entire existing files in Karkardooma eCourt have been digitized and a touch screen has been installed on the dais of Judge. He can view any file of the e-Court in digitized form by searching for the same date-wise, name-wise or Act/Section wise. There is a provision of a document visualizer and any document can be projected on the LCD Screens installed in the e-Court, so that the same are visible to the accused, witnesses or the prosecutor in the same Court, as well as when they are connected through Video-Conferencing. Other stakeholders of the case can have access to eFiles using secure login and password. The overall impact of establishment of E-Court will result in quick disposal of cases, ease of record maintenance, reliability of the evidence recorded and to bring more transparency in the functioning of the District Courts.

- Reduce the paper work. Ease of record maintenance
- Allow the judges to see e-files for review.
- Can be used by judge, judicial fraternity to review the case.
- Use as a backup by concern persons who have some doubt about the authenticity of the documents.
- Different courts will be able to share the information online.

- Playback live proceedings for court audience.
- Use of digital signature & encryption for integrity of documents.
- Tool for Education & Training of judicial officers and courtroom personnel.
- Doctors need not to cancel appointments for critical/emergency patients.
- Court, Hospitals, FSL, Jail can simultaneously share their presentations/documents and other information online in a secured mode.
- Remote parties can depose through Video Conferencing facility using ISDN and Broadband links in e-Court
- The documents of high secrecy which cannot be moved out of the department but needs to be shared with other agencies can be directly presented and discussed upon.
- System will increase physical security of doctors by not visiting the court thereby avoiding any physical presence in front of the accused or criminals.
- Doctors can depose and give expert opinion in much more relaxed and conducive environment.
- System can be used for other medical benefits other than the judicial matters.
- Travel and other related cost will be saved.

VII.SOME CHALLENGES & FUTURE SCOPE

With the arrival of e-Court concept the amount of data that needs to be managed and protect will be a mammoth and ultimate challenge for the judiciary.

- Based on data generated in the established e-Court, almost 85k files with 1.3TB data will be generated per year.
- System can't afford to lose even a single file as it makes the entire records unreliable and invalid in judicial terms
- Currently H.264 video format has been used with AES encryption for video recording which may be change/upgrade in the future therefore it is required to develop methodology for Interoperability of ever changing media formats/codecs.

Future Scope:

- e-Court on Cloud Network
- Setup TDR (Trustworthy Digital Repositories) for e-Court Records.
- Building Decision Support system for Judiciary

- Incorporation of OCR and smart discovery services, etc.

VIII. CONCLUSION

We have presented a state-of-the-art technique for introducing ICI in Indian courts for digitally preserving case files and visual information in chronological sequence. The design can be utilized to will help our judicial system to streamline and expedite their operation and case disposal rate in secure and cost effective manner.

IX. ACKNOWLEDGEMENT

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