Vision to Reality of Faster Dispensation of Justice through Inter-Operable Criminal Justice System-A Case Study

Dr. Saurabh Gupta, Ajay Singh Chahal, Sandeep Sood
State Informatics Officer, Senior Technical Director, Principal Systems Analyst
National Informatics Centre, Himachal Pradesh, HP Secretariat, Shimla-171002 (HP)
saurabh.gupta@nic.in, ajay.chahal@nic.in, sood.sandeep@nic.in
94180-38822, 94182-75076, 94184-53053

Abstract- A number of eGovernance projects, over the years, have been initiated in the Country and many of these have been noticeable success stories. However, most of the eGovernance Projects focus on a specific sector or function of the Government. The Inter-operable Criminal Justice System (iCJS), implemented in the Himalayan State of Himachal Pradesh is one such system, which differs from other eGovernance projects in the sense that it has been built upon three successful National level eGovernance projects namely, Case Information System, Kanoon Vyavastha (*improvised upon Common Police Integrated Application-CIPA*) and ePrisons to realize the vision of preventing crime, helping victims and rehabilitating criminals. This paper gives an overview of the iCJS project, its need, additional functionalities added in Himachal model, and critically analyses the status of implementation of the iCJS in the Himalayan State in the light of the difficult geographical terrain, longer travelling times, Internet connectivity issues and interests of individual stakeholder departments. It also outlines the technical and legal challenges, alternatives and future scope for enhancement in the light of the proposed Nation-wide roll-out of the iCJS within existing legal framework.

Keywords-inter operable, criminal justice system, implementation analysis, court, prison, forensic, police

I. INTRODUCTION

The Inter-operable Criminal Justice System (iCJS) is made up of two important words "inter operable" which means "able to use and exchange information" and "criminal justice" which is a generic term for "the procedure by which criminal conduct is investigated, arrests made, evidence gathered, charges brought, defenses raised, trials conducted, sentences rendered, and punishment carried out" [1]. In Order to ensure fairness in the procedure, different agencies are assigned different functions.

The Criminal Justice System in India comprises of the three important wings of the Police, Judiciary and Correctional Administration. The system followed in our country for dispensation of justice is the adversarial system of common law inherited from the British, in which timely availability of correct and old information plays a very important role in justice dispensation. Under the Constitution of India, Police and Prison are State subjects but the Supreme Court at Central level and High Courts at State level administer the judiciary. Although, Police and Prison are State Subjects, the organisational structure, administration and functioning of all the wings of criminal justice are governed by the Central laws such as Indian Penal Code, Criminal Procedure Code, and Indian Evidence Act [2]. The Courts, Police and Prisons have realized the role and importance of IT tools in automating their internal processes and developed their own software namely, Case Information System (CIS), Common Integrated Police Application (CIPA) / Core Application Software (CAS) of Crime and Criminal Tracking Network & System (CCTNS) and ePrisons. These software have been either implemented or are under implementation in the country. All these software use different technologies for data collection and reporting purposes.

The basic objective of the Inter-operable Criminal Justice System has been faster delivery of justice to the litigants in view of the large number of criminal cases pending in various Courts. The reasons for such delays are numerous, the most common being, besides the lack of resources and manpower constraints, the delayed and in-complete transfer of information from Police to Courts, Forensics to Police, Police to Prison, Court to Prison, Prosecution to Court and vice-versa in all cases. The Police, Forensic Science Laboratories, Prosecution, Courts and Prisons are the major stakeholders in the process of delivery of criminal justice in our country.

Figure 1: iCJS software at http://admis.hp.nic.in/cjs

We envisage that with the use of proper IT tools for data integration, electronic exchange of information will lead to better investigations, faster and fair disposal of cases throughout the country. The scope of iCJS, for the purpose of this paper, is restricted to the data being collected through various computerised systems, and does not include high-tech specialized equipment or gadgets, which may be at the disposal of the law enforcing agencies.

II. WHY ICJS

The need for an Inter-operable Criminal Justice System was felt in the United States of America after the September 11, 2001 when new emphasis on homeland security was felt and demand increased for information sharing across multiple agencies and the urgency of integrating justice information systems at Central, State and local levels [3]. In India, besides homeland security, another issue of delays in justice delivery processes is the main reason for visualizing the iCJS by linking related information from different domains. Different organisations within the Criminal Justice System have disparate roles and significantly different uses for IT but sharing of certain information with others improves the efficiency of every organisation within the system.

The main problem is the huge backlog of unresolved cases in courts which are more than one year old. This pendency is increasing over the years and resulting in increases in litigation costs, loss or diminished reliability of evidence by the time of trial and unevenness and inconsistency in the verdicts that ultimately are reached at trial. This implies that conviction rates go down and law abiding citizens start losing faith in the criminal justice system [4]. There were a total of 2.68 crore cases pending in the country in various Districts and Subordinates Courts, of which almost 70% (1.88 crore) were criminal cases, as on 30th September 2012. As compared to this, the State of Himachal Pradesh (HP) had a similar situation, with a backlog of 1,30,377 total cases, out of which 62% (79,390) were criminal cases. Himachal Pradesh was having a slightly lower disposal rate as on 1st July 2012, against the nation-wide figures [5]. Hence, the need for iCJS.

A related issue is that this delay in disposal of cases results in large number of under-trials being lodged in the prisons for very long periods. Many times, they remain in prison for a period longer than the maximum term permissible under the section applicable on the crime committed, if convicted in the trial. These under-trials, who are 64.7% of total prisoners as on 31st December 2011, are crowding the prisons, which are already 112% full to their capacity at the national level [4].

The status of prisoners in Himachal Pradesh is comparatively better than the national average. Against the total capacity of 1626 inmates in 14 prisons, there were 1617 prisoners (99%) lodged in prisons. Also, the number of under-trials was 717 (44%), which is considerably lower than the national figure [6]. However, the crime statistics show that a total of 15,937 crimes were registered in various police stations of HP in the year 2012 [7]. Comparing this figure with the total pending criminal cases in the State (79,390), it implies that the disposal rate is low because the higher figure of cases in courts means back-log pending cases older than one year. The less number of prisoners in jails could also be as a result of lower conviction rates due to delayed disposal of cases.

In view of the above statistics, we deduce that the iCJS system for speedier justice, using IT for integration of existing databases, is urgently required even in a small hilly State like Himachal Pradesh, where terrain is difficult and manual exchange of information consumes lots of time.

III. ICJS IMPLEMENTATION IN HIMACHAL PRADESH

The Himalayan State of Himachal Pradesh is sparsely populated, with a total population of 68.56 lakh, low population density of 123 persons per sq/km but a very high literacy rate of almost 83.78%[1].

The iCJS model of implementation covers the Courts, Police, Prisons and Forensic Science Laboratory (FSL). The number of locations covered for each Organisation is given below, followed by the financial year (FY) wise transaction count of various SW:

Table-1: Coverage of iCJS in Himachal Pradesh

Courts	100 (in 10 Districts)
Forensic Science Labs	3
Police Stations	114 (in 13 Police Districts)
Prisons	14

Table-2: Transaction Count[2]

Year	Police	Courts	Prisons	FSL
FY 2012-13	5,135,93	8,23,237	14,000	15
FY 2011-12	4,21,387	50,234	-	-
FY 2010-11	4,20,965	-	-	-

The technology and software used in the implementation of all software that forms part of the iCJS are given below:

Table-3: Software and Technology

Software/ Technology	Kanoon Vyavastha / CIPA	Case Information System	eFSL (Forensics)	ePrisons
Database/ Client Interface	PostgreSQL/ Java MS SQL Server/ ASP. Net	MySQL/ PHP	MS SQL Server/ ASP. Net	MS SQL Server/ ASP. Net
Data consolidation technology	Symmetric DS/ Web based	Manual	Web based (integrated with KV)	Web (integrated with KV)
Data consolidation frequency	Whenever connectivity is available	Day-end (as & when required)	Real time	Real time
Information sharing	CIS, eFSL, ePrisons	KV, ePrisons	KV	KV, CIS
eSuperdari software has also been developed for accepting online applications for release of seized vehicles/property, send arrest reports, release prisoner property.				

[1] Census of India 2011

[2] Figures for last 3 financial years are available, in case SW was implemented at that time.

We can see that, heterogeneous technology has been used in the development of National level SW of CIS, Kanoon Vyavastha (KV upon CIPA) and ePrisons. However, the modules developed locally in Himachal Pradesh, for core iCJS and additional modules of Forensics laboratories (eFSL) and online release of seized articles, are on same technology i.e. ASP.Net/MS-SQLServer. Data integration has been achieved by online transfer of locally stored data, as per availability of Internet connectivity (through BSNL, HIM SWAN, NICNET) in the case of CIS and CIPA (police station data). The remaining software of ePrisons and eFSL are web-enabled, implemented on the web as shown in the Figure-2 [8].

In Himachal, besides developing the eFSL software application for Forensic Science Laboratories and eSuperdari SW for release of case property, additional databases of land records, vehicles, driving and arms licenses have been integrated for improving the quality of investigations. The 3 forensic laboratories in the State received a total of 5317 cases for reporting during the year 2011-12 and 616 cases were pending as on 31st March 2012. Also, the scientists of these laboratories appeared in Courts for evidence in 236 cases [9]. Therefore, there is lot of potential for eFSL software in speeding up the reporting process form forensic laboratories to police. The personnel information and finance databases, in electronic format, have also been linked to the Kanoon Vyavastha interface for manpower and resource planning [8]. The improvements brought about by the iCJS system have been summarized in terms of the performance indicators, in Table-4.

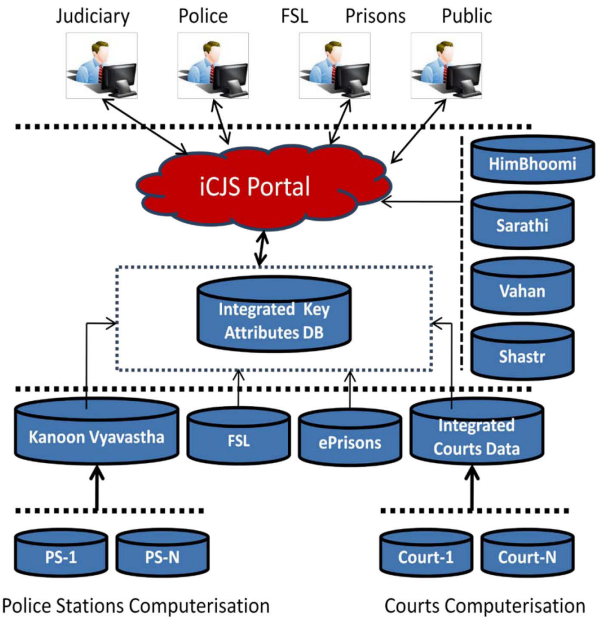

Figure-**2**: Conceptual diagram of iCJS implementation in Himachal Pradesh.

Table-4: Performance indicators of iCJS in HP

Performance Indicator[3]	*Before iCJS*	*After iCJS*
Online Complaint filing	NA (Not available)	Available
Action on complaint	A week onwards	Within 24 hours
Sending advance parcels information to Forensic	5 days	Instantly
First Information Report (FIR) copy	Day-end	Instantly
FIR details for court cases	Police dependent	Instantly
Forensic report availability	4-days onwards	Instantly
Citizen Feedback	Manual channels	Online
Prisoner dossiers	NA	Available
Savings of prisoner relatives	Lots of time+cost	Through Video Conference (VC)
Citizen access to crime data	NA	Available
Order/ judgments against an FIR/ prisoner/ accused	30 Days	Immediately upon Publishing
VC presence of under-trials	NA	Available
VC based interrogation	NA	Available
Access to online databases	NA	Available
GIS linkage	NA	Integrated
Contraband passing to prisoners	Possible	Not possible

A. Government Process Re-engineering:

There is no comprehensive law in existence for regulating and governing e-Governance, except few provisions of the IT Act 2000 as it was passed with an objective to create legal framework for e-contracts and recognition of e-records, whereas the issues related to consumption of data were not addressed. Thus using the existing legal framework, an effort has been made to introduce certain process changes in the Police, Prisons and Forensics SW. However, the process changes carried out are only those which could be effected without changes in the existing laws. These are classified as front-end and back-end, as given below.

i. Front Office Process Changes:

- Process to convert an online complaint registered under 163 CrPC into an FIR for cognizable

[3] As per discussions with departmental officials and users.

offences under 164CrPC at Police Station level is available.

- Process to transfer crime scene Parcel Information from Police Station to FSL is through SW.
- Facility of booking of online VC request with Prisoner by relatives/ IOs in Police Stations.
- Online submission of request for release of case property, from Courts to Police and vice-versa.

ii. Back-Office Process Changes:

- Online transfer of FSL reports against crime scene parcels sent by Police through a web-interface.
- FIR data has been made available directly to the Courts from Police Stations.
- Court Orders/Judgements are now directly available to Prisons and Police Stations in their respective software against FIR number.
- VC based presence of under-trials in courts has been started.
- There is online availability of FIR in FSL in place of sending a printed copy along with parcels.
- Automatic SMS/Email/Software alerts are generated whenever some crime happens, missing person is reported, dead body is found, court case pertaining to an FIR is listed in the Court Cause list, orders or judgements pertaining to Case-FIR are issued by Court, prisoner release orders are received, prisoner release date approaches, prisoner movement on account of visit to Court, hospital, furlough, parole takes place.

B. Challenges:

Any initiative of iCJS kind, involving four major wings of the criminal justice system, faces a number of technical and legal challenges arising out the different objectives being pursued by every wing. Some of the challenges, faced and addressed in the implementation of iCJS in Himachal Pradesh are as following:

- The four applications are using two different OS, three databases and scripting technologies. Using Symmetric DS technology, data integration was achieved and a new central software interface was developed for iCJS MIS purposes.
- Departmental officials were afraid to link their data and intervention from the highest levels in the departments ensured that a pilot was approved to gain confidence of employees.
- There was resistance to doing complete data entry related to other domains. For example, the court officials were not following the standard format of an FIR while entering case information during filing stage. This created a problem of accessing the correct FIR details from police database because of incorrect FIR format in CIS SW. Only after demonstrating that such data would eventually be useful to all stakeholders, it was possible that all data entry could be ensured.
- The number of employees to be trained on the SW was large and was achieved by involving NIC District Centres and creating a pool of master trainers.
- Coordination among stakeholders was the greatest challenge as different stakeholders had varying objectives in using domain specific applications. Involvement of the top leadership was required to achieve synergy.
- The evidence Act does not allow recording of witness statement taken by police, thus police is using the recording of witness statement in 164 CrPC in heinous crimes as backup only to present to the court.
- The Information Technology Act 2008(Amended) does not provide the provision of using digital signature for submitting the police challan to court, thus using employee ID, providing various roles and privileges is, for sharing information among various wings.

C. Alternatives:

The iCJS, basically, shares information for better decision making as well as to avoid time delays, involved in manual information exchange. The two choices available for further improving its utilization are analyzed below:

The first option is that the individual software applications can be modified to consume data of other domain. For example, whenever FIR details need to be entered in the Court software during filing of case information, all parameters of the FIR must be picked up directly from the KV database and populated through web-services. This scenario assumes good Internet connectivity otherwise the user may be held up during data entry stage.

The second option is to re-develop all three software as a single software solution with single database. This will be a web-enabled solution only.

At present, the first option appears better because it can be implemented directly with minor changes and at a lesser cost. This is what the iCJS initiative of Himachal Pradesh also proves.

IV. KEY FINDINGS

The iCJS implementation in Himachal Pradesh is an eye opener in the sense that the initiative has actually been implemented by integrating data of all domains at a central location. However, there are certain factors responsible for its success in the State of Himachal Pradesh, which are listed below:

- The CIPA software was already implemented in all Police Stations of the State and a local solution was developed to build web-enabled software on top of CIPA software and data, named Kanoon Vyavastha.

Many other States in the country, which are not having CIPA data, are in various stages of implementing the CCTNS[4] project, which may take some time.

- All Departmental solutions and iCJS SW are NIC developed either at Central or State level. Therefore, sharing of technical knowledge and up-grading specific SW solutions was not an issue among designers/ developers.
- Top leadership of the respective Departments was personally involved in the project and many dedicated officers devoted their time in fine-tuning the final solution.
- The stake-holders understand the short-comings of this iCJS software but are waiting for major process reforms and approvals from higher Judiciary for consuming data/reports which are electronically signed, as per provisions of the Information Technology Act 2008.
- In its present shape, the iCJS is restricted to sharing of information in electronic form. But even this has helped to cut down the number of long languishing under-trials in prisons because of iCJS data mining. The ultimate aim is to start consuming the information of other domains in respective SW. The individual SW will need to be modified accordingly.
- Faster disposal of cases is resulting in lesser under-trials and no over-crowding in prisons, which is a major problem in most of the jails of the country. Reduction in languishing under-trials directly increases the trust of the citizens in the criminal justice system.
- Since iCJS has been built upon existing SW solutions, adherence to eGovernance Standards will require SW modifications.
- Citizen centricity, even though limited to Prisoner Video Conference with relatives, online traffic Challan payments and online complaint filing in Police, have been a major success. The Prisoner VC, introduced recently, is being used extensively, considering the small number of prisoners in the state prisons [6]. Considering that the cost of one visit by relatives of prisoners is about Rs.2,000 (including travel, stay, lost wages for the period of visit), and about 50 such visits take place in various prisons, the savings of citizens work out to almost Rs.3.5 crores annually.
- There is a lot of utility of new processes introduced under the initiative such as under-trial VC with investigating officers, online requests for release of seized articles, VC based evidence of scientists of forensic labs.
- Presently, electronically signed reports are being exchanged between Police and Forensic Laboratories only. In its final format, data security and electronically signed data exchange will be required.
- The integration of human resource, finance, land records, vehicles, driving and arms licenses is a unique feature. However, it may not be easily replicable elsewhere in the country considering the complications of these individual systems.
- The initiative, if implemented in its proper format of direct consumption of data of other domains in own domain SW, can result in huge savings of cost, in terms of paper usage and time, thereby increasing the carbon credit ratings. For e.g. 1.30 lakh pending criminal cases in 100 courts of the state, use about 100 pages annually in the form of case filing information, FIR copy, charge sheet, witness statements, FSL reports, cause list, orders, judgements etc. In case, all these documents are generated and transferred electronically in courts, the approximate paper savings will be 1.30 crore pages per year.
- High literacy rates, awareness and high ratio of rural population in Himachal Pradesh, necessitates that Government officials and citizens are open to use of IT to simplify and speed up their work.

V. RECOMMENDATIONS

The recommendations for improving the scope of implementation of the iCJS are listed below:

- As opposed to information sharing, data consumption, directly in relevant SW modules, must be a pre-condition, for which all stakeholders must agree.
- All reports being used or generated through the iCJS must be electronically signed.
- Process changes requiring updation of existing laws/ acts/ rules must be carried out beforehand, as per provisions of the Information Technology Act 2008 (amended).
- Extensive capacity building is required at all levels on the finer aspects of using IT tools and software for collection of meaningful data and its utility.
- Establishment of VC facility in forensic laboratories will ensure that scientists can give evidence from their labs in court cases, saving time and money.
- Video recording of court proceedings, witness and crime scene is an important area which needs to be addressed. This feature, will not only be a long term record of these events, but also a check on the officials or witnesses.
- Security of data, during transfer from one domain to another and safeguarding it from hackers during investigation process, needs to taken on regular basis.
- Prosecution functions must be addressed in a better manner, and existing modules which are not being fully used, should be made functional.
- Citizen interface needs to be developed under iCJS.

[4] As per website of NCRB, CCTNS Progress Dashboard on 15th Nov-2013, http://ncrb.nic.in/cctns.htm

VI. CONCLUSION

There can be no doubt that an Inter-operable Criminal Justice System is the need of the hour in today's scenario where delay in delivery of justice is affecting millions of persons and access to the right information at the right time is critical for the effective operation of criminal justice agencies. The Government of India recognizes the seriousness of the situation and is proposing a standard iCJS for the Country as a whole and an expert Group has been constituted to study and finalize the SW solution. The iCJS implementation of Himachal Pradesh forms a reference point for this because a serious initiative has been taken up by the tiny Himalayan State and actually implemented in a raw form. Even making such an attempt to integrate the 3 wings of criminal justice system is commendable for Himachal Pradesh because of the inter-organisational issues and conflicts. There is definitely a lot more scope for enhancements and inclusion of additional modules. Some of the new processes may require changes in the existing Acts/Rules. The additional benefits to stakeholders, especially, the Police and Courts (reduction in overall pending cases and increase in conviction rates), will start accruing when electronically signed data is exchanged and consumed in the iCJS solution.

REFERENCES

[1] *Website* http://legal-dictionary.thefreedictionary.com accessed on 23rd November 2013.

[2] *Handbook of Asian Criminology 2013*, pp. 199-211, Criminal Justice System in India, R.Thilagaraj Ph.D.

[3] *Information Technology and the Criminal Justice System, April Pattavina, SAGE, 2005*, p. 52, Advances in Criminal Justice IT.

[4] *Reforming the Criminal Justice System, Dr. N Manoharan, Senior Fellow, VIF*, published on 8th February 2013, available at http://www.vifindia.org/print/1600, accessed on 23rd November 2013,

[5] *Court News, October-December 2012, Supreme Court of India, p. 8,* available online at http://supremecourtofindia.nic.in/courtnews/2012_ issue_4. pdf, accessed on 20th November 2013.

[6] *Prisons in Himachal*, Department of Prisons and Correctional Facility website at http://hpprisons.nic.in, accessed on 22 November 2013.

[7] *Brief Facts of Himachal Pradesh 2012-13, p.50,* Economics & Statistics Department publication,

[8] *Informatics, Vol 22 No.2, October 2013,* pp.20-21, Interoperable Criminal Justice System.

[9] *Annual Administrative Report 2011-12*, pp. 42-45, HP State Forensic Laboratory, Junga, Shimla,.

ACKNOWLEDGMENTS

We are thankful to all officers of the State Judiciary, Police, Prisons, Forensic Science Laboratory and National Informatics Centre, who have been instrumental in implementing and showcasing the vision of an integrated software application comprising of different domain-sets and have provided the necessary information for this paper.