

# Virtual Courts in India: A Strategy Paper

April 2020

**This report is an independent, non-commissioned study undertaken by the Vidhi Centre for Legal Policy, an independent think-tank doing legal research to make better laws and improve governance for the public good.**

# About the Authors

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The co-authors of this report are part of JALDI- Justice, Access & Lowering Delays in India initiative at Vidhi. They are:

Deepika Kinhal, Lead & Senior Resident Fellow

Ameen Jauhar, Senior Resident Fellow

Tarika Jain, Vaidehi Misra, Aditya Ranjan and Chitrakshi Jain, Research Fellows

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Errors, if any, in the report are the authors' alone.

For more information, see [www.vidhilegalpolicy.in](http://www.vidhilegalpolicy.in)

Contact us at [jaldi@vidhilegalpolicy.in](mailto:jaldi@vidhilegalpolicy.in)

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# Executive Summary

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Unlike just a few months ago, the vision of virtual courts in India no longer seems audacious. The COVID-19 induced lock-down of courts has given a flavour of the potential that technology holds to address a key concern –access to the judicial system, and thereby, justice. Combined with process re-engineering and optimization of court processes, the Indian judiciary, both in its physical and virtual form, is staring at a future with immense possibilities in innovation. At this turning point for the Indian judiciary, this strategy document seeks to provide decision makers and stakeholders perspectives on how to approach this mammoth task of technology integration and adoption in an extremely complex system.

The strategy document is influenced by three key realities of the system as they currently stand: 1. Its immediate needs to keep the system accessible 2. Partial advancements made under the e-Courts mission mode project and the need to leverage rather than abandon them 3. Abysmal adoption due to technology aversion and lack of capacity.

The document is divided into three major parts and in each, potential solutions are provided to address the above realities, all of which have varying effects on different stakeholders within the system and the system itself.

- I. **Journey from ODR platforms to Virtual Courts-** In this section, similarities and differences between ODR platforms that exist in India and elsewhere are mapped. Given that the existing platforms are far more customised for judiciary's needs than any other *ad-hoc* solution, it is suggested that the judiciary invite existing platforms to showcase their abilities and if found suitable, adopt these platforms on a temporary basis. Annexure A contains guiding principles, concerns and system capabilities that the judiciary needs to look out for in such platforms or any other technology offering under consideration.
- II. **Evaluation of E-Courts implementation-** The e-Courts project established the edifice of technological infrastructure in the judiciary, significantly at all the District and Taluka Courts of India. Along with Case Information Systems and National Judicial Data Grid (NJDG) it has fundamentally changed the way judicial data is captured and studied. However, the lack of systematic planning and budgeting and near absence of adoption strategy, have severely impeded the system's ability to reap the entirety of benefits of this two decades long project.

As a phased solution to this, it is suggested that: 1. A steering committee be established to dedicatedly strategise, plan and implement technology solutions for the judiciary; 2. Such a committee is to comprise of experts in diverse fields including technology, management, systems and design thinking with overall judicial oversight; 3. In the long term, a legislation backed authority be established to ensure the best of technology and the best of minds have a way of contributing to the judiciary while ensuring accountability of such an authority and judicial independence. This is essential to institutionalise judicial innovation.

- III. **Principles Framework:** The need for a dedicated authority for modernisation of the judiciary through technology must be balanced with the judiciary's uncompromising need for adherence to certain principles such as transparency, fairness, accessibility etc. To this end,

this section lays down an elaborate principles framework on three fronts- legal, technology and design, and data. These provide the foundation on which any technology for the judiciary can be considered and built. This section also lays down an elaborate adoption framework to guide the implementation strategy.

- IV. **Road-map towards Virtual Courts:** A common factor in the implementation of e-Courts project and the current pandemic induced technology adoption, is the lack of ‘systems’ thinking’ approach. Simply put, *systems’ thinking* is a holistic approach to analyse the manner in which a system’s constituent parts inter-relate and work overtime, within the context of larger systems. To infuse systems’ thinking approach in judiciary, this section begins by giving an overview of the judicial system along with branches within the registry which handle different stages in a case (mapped for a civil case). For any change in a complex system, targeted strategy for adoption needs to be mapped for each stakeholder in the judiciary and its related systems such as the police and prisons. Adoption of any change at scale is possible only when each interaction with the changed system adds specific value or utility to all the stakeholders involved.

To guide the judiciary in prioritizing amongst different system capabilities required for an end-to-end virtual courts, each such capability is mapped against four parameters- *urgency, impact, viability* and *feasibility*. Thereafter, each capability is graded *high, medium or low* in order of priority, to arrive at a prioritization framework that could guide the judiciary both in the medium and long-term. In addition, phased implementation framework and challenges is illustrated through e-Filing example.

This document stresses on the need for systematic and scientific approach to technology integration in the judiciary. The current crisis that the judiciary finds itself in might in fact work as an opportunity to tackle some hard issues of delineating administrative and judicial functions in the judiciary. For realizing an ambitious vision of establishing virtual courts in India, there is no option but to have a dedicated body whose diurnal responsibility is to think and act for the judicial system and its various stakeholders.

# Glossary of Terms

<b>Neural machine translation (NMT)</b>	A technique to translate one language to another using artificial intelligence. It uses an artificial neural network (akin to the neurons in the human brain) to predict the likelihood of a sequence of words, typically modeling entire sentences in a single integrated model. Google translate is the most common example of NMT.
<b>eCourts Mission Mode Project</b>	A pan-India project, monitored and funded by Department of Justice, for the implementation of information and communications technology (ICT) in the Indian judiciary.
<b>ADR</b>	Alternative Dispute Resolution is method of settling disputes without litigation, primarily, though not limited, to arbitration, negotiation and mediation.
<b>ICT</b>	Information and communications technology is an all-encompassing term that refers to the use of technologies such as computers and other electronic equipment to collect, store, use and send data electronically.
<b>ODR</b>	Online dispute resolution is an all-encompassing term to refer to mechanisms for resolving disputes facilitated through the use of electronic communication and other forms of ICT. Its identifying feature is that some if not all the internal processes such as enabling filing of pleadings, conducting proceedings are done online.
<b>Private ODR</b>	Private online dispute resolution is a form of ADR conducted by private institutions that are either completely independent or associated with an organisation's dispute resolution platform. They rely on the use of electronic communication and other forms of ICT to resolve disputes.
<b>Court annexed ODR</b>	A form of ADR that is conducted under the supervision of courts with the use of ICT technology. The use of court annexed mediation cells, using ICT, is an example of court annexed ODR.
<b>Virtual Courts</b>	Dispute resolution in courts through the use of ICT. The definition does not presume an end-to-end virtual court. In the chapter 'Technology in the Indian Judiciary' virtual courts also refer to the pilot project of eCourts that is being tested to settle traffic related offences by a virtual judge.
<b>Internet court</b>	In this paper, it specifically refers to a 24x7 court in Hangzhou, Beijing and Guangzhou, China that adjudicates disputes using AI driven virtual judges and reliance on technologies like cloud computing and blockchains.
<b>NSTEP</b>	National Service and Tracking of Electronic Processes is an application created under the supervision of Supreme Court eCommittee, which allows for electronic delivery of processes by process servers and between court establishments.
<b>Algorithmic transparency</b>	Depending on the type and use of an algorithmic decision system, the desire for algorithmic transparency may refer to one, or more of the following aspects: code, logic, model, goals (e.g. optimisation targets), decision variables, or some other aspect that is considered to provide insight into the way the algorithm performs to use, regulate, and are affected by systems that employ those algorithms.
<b>Open justice</b>	Is an ensemble of practices and defeasible presumptions that aim to increase transparency and bring accountability within the justice system.
<b>Open standards</b>	Refers to a format or protocol that is publicly available and subject to full public assessment and use without constraints. In most cases, all of the components also satisfy the definition of open standards themselves.
<b>Open source</b>	Denotes a software for which the original source code is made freely available and may be redistributed and modified.

# Background

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*“While technology has enabled us to go paperless in many courts and go digital, if not all the way then substantially, in many courts, we now have the benefit of modern artificial intelligence tools that will assist in improving the efficiency of our justice system through sophisticated and contextual automation of existing repetitive non-judicial tasks and functions to reduce pendency, expedite judicial adjudication and create more time for judges to resolve complex cases.”*

Justice Sharad Bobde (CJI), 2019<sup>1</sup>

The aforementioned quote is from an address delivered by the incumbent Chief Justice of India, Justice Sharad Bobde, who recently launched the first-generation *neural machine translation* (NMT) tool, SUVAS, on the national Constitution Day (November 26, 2019). In his speech, Justice Bobde expressed optimism on how emerging technologies like artificial intelligence (AI), and more conventional technology interventions, can transform Indian courts. The necessity for this transformation has become even more prominent under the current scenario where due to the outbreak of the COVID-19 pandemic, courts’ diurnal functioning has practically come to a halt. Courts more than ever before, need to invest heavily in the development of technological facilities and infrastructure. Access to justice needs to be reimaged. It is in this background, the discourse on technology integration in the judiciary must be evaluated with urgency and pragmatism.

Fortunately for the Indian judiciary, it had embarked on an overall technological advancement, particularly by integrating information and communication technology (ICT) in Indian courts, over the last two decades. Under the *E-courts mission mode project*, a methodical approach was adopted to lay down the infrastructural groundwork for technology integration in court processes. Given this project’s near culmination, it is an opportune moment to build upon its edifice, a more advanced and sophisticated technological framework for the Indian judiciary with a potential to radically alleviate access to justice issues across the country.

Modern ‘virtual courts’ driven by robust online platforms are particularly needed and well suited for India. With a surge in internet users (who constituted 34.8% of the population or 462 million people in 2016)<sup>2</sup>, the idea of virtual courts is more viable now than ever before. This current pandemic, unfortunate as it is, has given the much-needed momentum to take ICT integration in the judiciary towards the ambitious vision outlined by Justice Bobde. Radical advancements can be made to improve access to the justice system and expedite justice delivery. On the flipside, the pandemic induced resort to technology solutions has already resulted in certain ad-hoc unsustainable choices which might shake the very edifice on which the judiciary stands – principles of natural justice.

At this critical juncture for the institution, the JALDI (Justice, Access and Lowering Delays in India) initiative at Vidhi, wants to contribute to the Judiciary’s efforts to tide over the current crisis, while ensuring that these efforts capitalise on progress already made and contribute towards realising the ultimate vision of having virtual courts in the country. The aim of this strategy paper is to provide a

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<sup>1</sup> The Print Team, ‘AI can improve judiciary system’s efficiency’ – full text of CJI Bobde’s Constitution Day speech’ ( *The Print*, 27 November 2019) <<https://theprint.in/judiciary/ai-can-improve-judicial-systems-efficiency-full-text-of-cji-bobdes-constitution-day-speech/326893/>> accessed 23 April 2020.

<sup>2</sup> Internet Live Stats, Internet Uses by Country (2016) <<https://www.internetlivestats.com/internet-users-by-country/>> accessed 20 March 2020

holistic perspective on the way things stand and chart out a path forward, which addresses the system's immediate needs as well as provide a framework to plan ahead.

To this end, as a first step towards laying down a road-map towards virtual courts in India, the coming section gives a brief history to the genesis of the concept of virtual courts. It also highlights the similarities and differences between ODR platforms and virtual courts, to test the feasibility of using the former for judiciary's purposes. Thereafter, this paper takes stock of what already exists within the judiciary's e-courts ecosystem, in terms of technological capabilities, and proceeds to neutrally evaluate capabilities across more advanced jurisdictions in the world, with a particular focus on the legal framework used across such jurisdictions. In the last and the most important segment, a framework to strategically approach the 'virtual courts' mission is laid down.

## Journey from ODR platforms to Virtual Courts

The United Nations Commission on International Trade Law (UNCITRAL) Working Group defines online dispute resolution (ODR) as “[...] a mechanism for resolving disputes facilitated through the use of electronic communications and other information and communication technology”.<sup>3</sup> The need for such virtual dispute resolution was first identified by recognizing that there was a sharp increase in online cross-border transactions, necessitating a mechanism that resolved disputes arising from such transactions. E-Bay, the renowned and pioneering online marketplace, was one of the earliest organisations to experiment with the use of the internet for resolving its unconventional consumer disputes that would entail from the transactions conducted on its platform. Typically, such disputes would involve individuals situated in different geographical locations and the monetary value in contention could range from measly amounts to large sums of monies.<sup>4</sup> This emerging environment of e-commerce necessitated the novelty of the first virtual platform, a collaboration between eBay and Square Trade, in 1999.<sup>5</sup>

Since then, the attraction towards ODR has only risen in numerous jurisdictions across the world, given the inherent limitations of the traditional judiciary to expeditiously deal with commercial disputes. Especially since the explosion of online marketplaces for all kinds of services and goods, a combination of alternative dispute resolution (ADR) mechanisms to resolve disputes via ODR platforms has become a particularly attractive alternative to the judiciary. This successful integration of technology to improve efficiency in ADR processes has naturally led to an increasing interest in experimenting with online platform-based approach by the judiciaries in different countries<sup>6</sup> including India.<sup>7</sup>

ODR in practice has now taken three forms - private ODR using ADR mechanisms, court-annexed ODR and virtual courts. Realising the vision of virtual courts will be the focus of this strategy paper. Usually ODR platforms can be designed to be procedurally agnostic; the same technology platform could be used across various forms of adjudicatory offices such as ombudsmen, complaint boards, mediation and arbitration centres and courts themselves, through a potential for hybrid processes comprising of both

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<sup>3</sup> United Nations Commission on International Trade Law, UNCITRAL Technical Notes on Online Dispute Resolution, vii <[http://www.uncitral.org/pdf/english/texts/odr/V1700382\\_English\\_Technical\\_Notes\\_on\\_ODR.pdf](http://www.uncitral.org/pdf/english/texts/odr/V1700382_English_Technical_Notes_on_ODR.pdf)> accessed 06 March 2020.

<sup>4</sup> Colin Rule, 'Designing a Global Online Dispute Resolution System: Lessons Learned from eBay', (2017) 13 (2), The University of St. Thomas Law Journal, <<https://pdfs.semanticscholar.org/059c/f1ef054a7307e33ee45021c111448f2d0f53.pdf>> accessed 30 March 2020.

<sup>5</sup> Steve Abernethy, 'Building large-scale Online Dispute Resolution & Trustmark Systems', UNECE Forum, (2003) <<https://www.mediate.com/Integrating/docs/Abernethy.pdf>> accessed on 20 April 2020

<sup>6</sup> Colin Rule (n 4)

<sup>7</sup> See [vcourts.gov.in](http://vcourts.gov.in) which is part e-Courts Mission Mode Project.

online and offline elements.<sup>8</sup> However an end-to end virtual court would require a few additional features as listed below:

<b>Common features between ODR platforms &amp; Virtual Courts</b>	<ul style="list-style-type: none"> <li>• E-filing</li> <li>• E-notice through mediums such as e-mail, SMS, whatsapp etc.</li> <li>• Virtual hearings</li> <li>• Documents' exchange</li> <li>• Identity and access management</li> <li>• Storage and retrieval of digital data</li> <li>• Payment integration</li> <li>• Private break-out rooms for decision makers / parties</li> <li>• Smart Scheduling</li> <li>• Digital Signatures</li> </ul>
<b>Additional features in virtual courts</b>	<ul style="list-style-type: none"> <li>• Significantly more robust and scalable platform</li> <li>• Taking the registry online with specific access to different officers at different stages such as scrutiny officer, registrar(judicial) etc.</li> <li>• Integration with systems such as police, prisons, government etc. for different varieties of cases.</li> <li>• Open courts principle- public hearings</li> <li>• Significantly more robust and scalable platform</li> </ul>
<b>Limitations of any virtual offering</b>	<ul style="list-style-type: none"> <li>• Submission and inspection of physical evidence not possible</li> <li>• Technical glitches, lack of internet penetration and digital literacy amongst users of the system</li> </ul>

The above features list is to bring to fore the similarities and differences between existing ODR platforms and the envisaged virtual courts. However, it needs to be borne in mind that private ODR platforms are by default restricted to civil cases that can be resolved through ADR mechanisms. In addition, ADR compulsorily requires mutual consent between the parties to submit themselves to a resolution through one of the ADR mechanisms along with agreeing to use an online platform. However, with the judiciary, the online nature of the proceedings will be thrust upon all or a section of litigants, irrespective of their willingness or capability to participate. Therefore, it becomes essential for the judiciary to take a decision on proceeding with the vision for virtual courts based on the reality of its users and viability of technology solutions. Further, courts deal with all variety of disputes- civil and criminal; and deal with evidences beyond documents. The judiciary, as a system, also has a much lower tolerance for any kind of privacy and security violation and a much greater requirement for control over all data entering and being stored in lieu of any judicial process. These differences between ODR and virtual courts could in fact be the very reasons behind slow adoption of this idea within the judiciary.

However, in the current COVID-19 induced situation, the judiciary is in need of immediate solutions to continue to remain accessible. To this end, functional ODR platforms in the country could be tested to

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<sup>8</sup> UNCITRAL (n 3) 1

check their suitability for judiciary's needs albeit temporarily. During the course of the consultation session,<sup>9</sup> one of the points that emerged was that the judiciary needs technology platform catering to its needs rather than being forced to adapt to the solutions that exist for other purposes. For instance, judiciary has had to resort to using VIDYO, Zoom, webex etc. to conduct virtual hearings despite grave concerns regarding security features or the suitability of these private applications for the judiciary.<sup>10</sup>

Therefore, it is suggested that the judiciary invites ODR platforms operational in the country to showcase their technological capabilities as well as their suitability for courts' functioning. **Annexure A** contains details of the requirements that these platforms need to cater to along with potential systemic concerns that the platforms need to address. This could serve as a ready template to on-board one or more of these ODR platforms to serve the system's immediate needs.

It however cannot be stressed enough that even if the judiciary chooses the above route to cater to its immediate needs, it still needs to ensure that in the long run, it develops its own platform and technology infrastructure which is entirely under its control. The coming portions of this paper focus on how the judiciary could approach the virtual courts mission. It begins by giving a brief overview of international experience in this regard, especially since the COVID-19, before proceeding to evaluate Indian judiciary's technological capacity.

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<sup>9</sup> A consultation session for this strategy paper was organized on 25th April, 2020. See 'About the Author' section for details.

<sup>10</sup> Aditya AK, 'Home Ministry division issues guidelines for safe use of Zoom amidst security concerns' (*Bar and Bench*, 16 April 2020) <<https://www.barandbench.com/news/home-ministry-division-issues-guidelines-for-safe-use-of-zoom-amidst-security-concerns>> accessed 27 April 2020; LiveLaw News Network, 'Plea in SC against use of foreign apps like zoom, skype etc for video conferencing' (*Live Law*, 19 April 2020) <<https://www.livelaw.in/top-stories/plea-in-sc-against-use-of-foreign-based-apps-like-zoom-skype-etc-for-video-conferencing-155461>> accessed 27 April 2020.

# I. International Experience in Virtual Courts

Since the development of private ODR platforms in the late 90s,<sup>11</sup> virtual courts are the more recent iteration in this trend of using technology for dispute resolution. In fact, numerous jurisdictions are experimenting with different avatars of virtual courts, varying both in terms of the extent of virtual capabilities and the nature of cases resolved through such virtual courts. Establishing a virtual court typically involves the gradual transfer of court processes online. Facing challenges to the conventional face-to-face hearings in physical courtrooms, due to the ongoing COVID-19 pandemic, there has been an upsurge in two prominent uses of technology, namely, virtual hearings and electronic filings. This section first looks at the different models of virtual courts that have been evolving internationally, and then tracks the latest developments in the context of the pandemic impeding conventional justice administration.

## Cross-jurisdictional details of ODR and Virtual Courts

<i>Country/Region</i>	<i>ODR Interventions</i>	<i>Virtual courts</i>	<i>Types of cases adjudicated</i>	<i>Response to COVID-19</i>	<i>Governing law(s) and policy(ies)</i>
United Kingdom	ODR proposed for low value civil claims. <sup>12</sup>	Her Majesty's Courts and Tribunals Service (HMCTS) reforms programme, aims to modernise judiciary through technology. <sup>13</sup>	Phase 1 - Basic versions of online services for divorce & probate cases, civil money claims, social security pleas, and online plea services.  Phase 2 - Extended to public family law cases, and	Remote hearings taking place in compliance with open courts principle.	HMCTS Framework Document. <sup>14</sup>  Remote hearings are provided for in Coronavirus Act, 2020 <sup>15</sup>

<sup>11</sup> Steve Abernethy (n 5)

<sup>12</sup> Online Dispute Resolution Advisory Group, Civil Justice Council, 'Online Dispute Resolution for Low Value Civil Claims' <<https://www.judiciary.uk/wp-content/uploads/2015/02/Online-Dispute-Resolution-Final-Web-Version1.pdf>> accessed 24 April 2020.

<sup>13</sup> HM Courts & Tribunals Service, Guidance: The HMCTS Reform Programme (2019) <<https://www.gov.uk/guidance/the-hmcts-reform-programme>> accessed 30 March 2020.

<sup>14</sup> HM Courts and Tribunals Services, *HM Courts and Tribunals Service Framework Document* (Cm 8882, 2014) <[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/384922/hmcts-framework-document-2014.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/384922/hmcts-framework-document-2014.pdf)> accessed 16 April 2020

<sup>15</sup> Coronavirus Act 2020, Schedule 23-25 <<http://www.legislation.gov.uk/ukpga/2020/7/contents/enacted>> accessed 16 April 2020.

			immigration and asylum tribunals. Phase 3 (ongoing) - Common platform testing for criminal cases will continue.		
European Union	The European Online Dispute Resolution platform <sup>16</sup>		Consumer Disputes		Reg. (EU) No. 524/2013 on ODR for consumer disputes <sup>17</sup>
China	ODR used for e-commerce and domain name disputes.	Internet courts set up across three cities namely Hangzhou, Beijing and Guangzhou. These use AI and blockchain for dispute resolution. Mobile Courts have also been launched using <i>WeChat</i> .	Internet courts primarily adjudicate e-commerce and intellectual property related disputes.	Litigation to take place online. <sup>18</sup> The Chinese government has decided to extend the online arbitrations for any potential dispute arising out of the pandemic	White Paper on internet courts and their expansion published by the Chinese Supreme Court in December 2019. <sup>19</sup>
United States of America	Many states have launched	NextGen CM/ECF which allows	Small claims, consumer	Hearings are taking place through tele and	ODR Standards, Principles and Guidelines <sup>23</sup>

<sup>16</sup> European Union, 'Online Dispute Resolution' <<https://ec.europa.eu/consumers/odr/main/?event=main.trader.register>> accessed 24 April 2020

<sup>17</sup> Regulation (EU) No 524/2013 Of The European Parliament And Of The Council Of 21 May 2013 on online dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC (Regulation on consumer ODR) <<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:165:0001:0012:EN:PDF>> accessed 24 April 2020

<sup>18</sup> The Supreme People's Court of People's Republic of China, 'Courts make use of online platforms amid epidemic' (13 February 2020) <[http://english.court.gov.cn/2020-02/13/content\\_37533572.htm](http://english.court.gov.cn/2020-02/13/content_37533572.htm)> accessed 16 April 2020

<sup>19</sup> The Supreme People's Court of People's Republic of China, 'Chinese Courts, Internet Judiciary in Data' (18 December 2019) <[http://english.court.gov.cn/2020-02/13/content\\_37533572.htm](http://english.court.gov.cn/2020-02/13/content_37533572.htm)> accessed 16 April 2020

<sup>23</sup> The National Centre for Technology and Dispute Resolution, 'ODR Standards, Principles, & Guidelines' <<http://odr.info/standards/>> accessed 24 April 2020

	portals to mediate cases in Small Claims, Consumer Disputes, Family Law etc  ICANN adjudicates on domain name disputes and follows guidelines laid by NCTDR	for online filing of case documents and provides a comprehensive database of case records. <sup>20</sup>	disputes, domain names.	video conferencing. <sup>21</sup> New York is holding remote hearings for unessential matters too. <sup>22</sup>	Uniform Domain Name Dispute Resolution Policy <sup>24</sup>  ODR Standards of Practice, NCTDR <sup>25</sup>
Singapore	Court annexed ODR for resolving Motor vehicle claims, e-commerce claims	e-Litigation system allows for e-filing and electronic generation of orders.	Motor vehicle claims, e-commerce	The Supreme Court is hearing matters through video and teleconference using Zoom app.	COVID-19 (Temporary Measures) Act 2020. <sup>26</sup> Practice Directions for e-litigation <sup>27</sup> Audio Recording and Transcription Services <sup>28</sup> Guide on Video Conferencing <sup>29</sup>

<sup>20</sup> Public Access to Court Electronic Records <<https://www.pacer.gov/>> accessed 15 April 2020

<sup>21</sup> United States Courts, 'Judiciary Preparedness for Coronavirus (COVID-19)' (15 April 2020) <<https://www.uscourts.gov/news/2020/03/12/judiciary-preparedness-coronavirus-COVID-19>> accessed 16 April 2020

<sup>22</sup> New York State: Unified Court System, 'Press Release: Virtual Courts Expanded Beyond the Limited Category of Essential and Emergency Matters' (13 April 2020) <[https://www.nycourts.gov/LegacyPDFS/press/PDFs/PR20\\_15virtualcourtstortsetc.pdf](https://www.nycourts.gov/LegacyPDFS/press/PDFs/PR20_15virtualcourtstortsetc.pdf)> accessed 16 April 2020

<sup>24</sup> ICANN, 'Uniform Domain-Name Dispute-Resolution Policy' <<https://www.icann.org/resources/pages/help/dndr/udrp-en>> accessed 24 April 2020

<sup>25</sup> Advisory Committee, National Centre for Technology and Dispute, 'Online Dispute Resolution Standards of Practice' <<https://www.icann.org/en/system/files/files/odr-standards-of-practice-en.pdf>>. accessed 24 April 2020.

<sup>26</sup> COVID-19 (Temporary Measures) Act provisions relating to temporary reliefs <<https://www.mlaw.gov.sg/news/press-releases/2020-04-20-COVID-19-temporary-measures-act-provisions-relating-to-temporary-reliefs-to-commence-on-20-april-2020>> accessed 27 April 2020.

<sup>27</sup> Supreme Court of Singapore, 'Supreme Court Practice Directions' <<https://epd.supremecourt.gov.sg/>> accessed 24 April 2020.

<sup>28</sup> Supreme Court of Singapore, 'Supreme Court Audio Recording And Transcription Services' <<https://www.supremecourt.gov.sg/services/court-services/audioandtranscriptionservices>> accessed 24 April 2020.

<sup>29</sup> Supreme Court of Singapore, 'Guide On The Use Of Video Conferencing And Telephone Conferencing' (27 March 2020) <<https://www.supremecourt.gov.sg/docs/default-source/default-document-library/2020-03-27---guide-to-telephone-conferencing-and-video-conferencing.pdf>> accessed 18 April 2020.

Hong Kong			COVID-19 related disputes especially re. micro, small and medium-sized enterprises (MSMEs).	COVID-19 Online Dispute Resolution Scheme launched by the Dept. of Justice. <sup>30</sup>	
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## Recent developments in response to COVID-19

- In the UK, the Ministry of Justice<sup>31</sup> and the Judiciary<sup>32</sup> have urged for the adoption of remote hearings. Wherever possible, media persons will be allowed remote access to hearings making it public, in order to safeguard the principle of open justice. In other instances, the hearings will be held privately, although they will be recorded.<sup>33</sup> Moreover, Coronavirus Act 2020 enables the use of fully video and video enabled courts for conducting proceedings with all parties at remote locations given the emergency situation.<sup>34</sup>
- The Supreme People's Court of China, i.e., the Apex Court, ordered “courts at all levels to guide litigants to file cases or mediate disputes online, encouraging judges to make full use of online systems for litigation, including those for case filing and ruling delivery, to ensure litigants and their lawyers get better legal services and protection.”<sup>35</sup>
- The Department of Justice, the Government of the Hong Kong Special Administrative Region has announced the COVID-19 Online Dispute Resolution Scheme. Under this Scheme, a multi-tiered ODR process is being developed to resolve disputes arising out of COVID-19, especially for those involving micro, small and medium-sized enterprises (MSMEs).<sup>36</sup> This step is likely to help reduce the burden on local courts by absorbing the upsurge of disputes arising out of COVID-19 and increasing access to remedies to the affected persons.
- In the United States, efforts are increasingly being made to hear matters through telephones and videoconferencing.<sup>37</sup> Courts in New York, in particular, have most recently expanded the

<sup>30</sup> Department of Justice, COVID-19 Online Dispute Resolution (ODR) Scheme, (13 April 2020) <[https://www.doj.gov.hk/eng/public/blog/20200413\\_blog1.html](https://www.doj.gov.hk/eng/public/blog/20200413_blog1.html)> accessed 18 April 2020.

<sup>31</sup> HMCTS telephone and video hearings during coronavirus outbreak (14 April 2020) <<https://www.gov.uk/guidance/hmcts-telephone-and-video-hearings-during-coronavirus-outbreak>> accessed 16 April 2020.

<sup>32</sup> Courts and Tribunals Judiciary, 'Review of court arrangements due to COVID-19, message from the Lord Chief Justice' (23 March 2020) <<https://www.judiciary.uk/announcements/review-of-court-arrangements-due-to-COVID-19-message-from-the-lord-chief-justice>> accessed 16 April 2020.

<sup>33</sup> Practice Direction 51Y – Video Or Audio Hearings During Coronavirus Pandemic (25 March 2020) <<http://www.justice.gov.uk/courts/procedure-rules/civil/rules/part51/practice-direction-51y-video-or-audio-hearings-during-coronavirus-pandemic>> accessed 16 April 2020

<sup>34</sup> Department of Health and Social Care, 'Impact assessment- Coronavirus bill: summary of impacts' (23 March 2020) <<https://www.gov.uk/government/publications/coronavirus-bill-summary-of-impacts/coronavirus-bill-summary-of-impacts>> accessed 16 April 2020

<sup>35</sup> The Supreme People's Court of People's Republic of China, 'Courts make use of online platforms amid epidemic' (13 February 2020) <[http://english.court.gov.cn/2020-02/13/content\\_37533572.htm](http://english.court.gov.cn/2020-02/13/content_37533572.htm)> accessed 16 April 2020

<sup>36</sup> Department of Justice, COVID-19 Online Dispute Resolution (ODR) Scheme, (13 April 2020) <[https://www.doj.gov.hk/eng/public/blog/20200413\\_blog1.html](https://www.doj.gov.hk/eng/public/blog/20200413_blog1.html)> accessed 18 April 2020

<sup>37</sup> United States Courts, 'Judiciary Preparedness for Coronavirus (COVID-19)' (15 April 2020) <<https://www.uscourts.gov/news/2020/03/12/judiciary-preparedness-coronavirus-COVID-19>> accessed 16 April 2020

virtual courts model (which primarily features videoconferencing) from only essential matters to include non-essential pending matters.<sup>38</sup>

- In Ontario, the Supreme Court of Justice has extended video and teleconferencing from urgent matters to all matters. E-filings are being permitted using electronic signatures. Moreover, members of the media and public can gain access to the proceedings by emailing their requests to the court staff.<sup>39</sup>
- The Supreme Court of Singapore, too, has issued guidelines for using audio and video conferencing for hearing matters using Zoom.<sup>40</sup> It has introduced in the COVID-19 (Temporary Measures) Act 2020, now allow court proceedings to be conducted using remote communication technology (e.g. teleconference, video conference, and email) such that physical attendance in the courtroom can be minimised or dispensed with.

## Key Takeaways

The above discussion shows that technology in courts has primarily taken two forms:

- The first model involves partial automation of some of the processes which form the larger litigation cycle, such as filing of complaint whereas other steps continue to exist offline such as submission of evidence and obtaining of decrees. The second model involves an ecosystem approach wherein the entire dispute resolution process is happening online, as seen in a few courts in China.
- As seen from the example of the UK, significant investment in infrastructure is essential to ensure that virtual courts have the necessary foundation to be operational in practice. Virtual courts need to be rolled out in a phased manner, beginning with certain class of cases, such as motor vehicle accident cases, loan defaults, consumer cases that have limited questions of law and fact.<sup>41</sup>
- The recent developments in the UK (the Coronavirus Act, 2020) and Singapore (COVID-19 (Temporary Measures) Act 2020) have shown that detailed legislations which lay down the contours of measures essential in the judiciary, albeit on a temporary basis, are desirable over *ad hoc* measures being taken by different courts, as is happening in India.
- Like in Hong Kong and China, court-annexed ODR which enables dispute resolution through ADR methods has great potential to resolve COVID-19 related disputes efficiently without burdening traditional courts.

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<sup>38</sup> New York State: Unified Court System, 'Press Release: Virtual Courts Expanded Beyond the Limited Category of Essential and Emergency Matters' (13 April 2020) <[https://www.nycourts.gov/LegacyPDFS/press/PDFs/PR20\\_15virtualcourtstortsetc.pdf](https://www.nycourts.gov/LegacyPDFS/press/PDFs/PR20_15virtualcourtstortsetc.pdf)> accessed 16 April 2020

<sup>39</sup> Superior Court of Justice, 'Suspension Of Superior Court Of Justice Regular Operations' (2 April 2020) <<https://www.ontariocourts.ca/scj/COVID-19-suspension-crim/>> accessed 16 April 2020

<sup>40</sup> Supreme Court of Singapore, 'Guide On The Use Of Video Conferencing And Telephone Conferencing' (27 March 2020) <<https://www.supremecourt.gov.sg/docs/default-source/default-document-library/2020-03-27---guide-to-telephone-conferencing-and-video-conferencing.pdf>> accessed 18 April 2020

<sup>41</sup> Deepika Kinhal, 'Every Crisis Presents an Opportunity – It's Time for India to Ramp Up its ODR Capabilities' (Live Law, 22 March 2020) <<https://www.livelaw.in/columns/every-crisis-presents-an-opportunity-its-time-for-india-to-ramp-up-its-odr-capabilities-154196>> accessed 22 March 2020 and Akankshha Agrawal, 'With judiciary embracing technology, time to push dispute resolution online' (Business Standard, 29 March 2020) <[https://www.business-standard.com/article/current-affairs/with-judiciary-embracing-technology-time-to-push-dispute-resolution-online-120032901023\\_1.html](https://www.business-standard.com/article/current-affairs/with-judiciary-embracing-technology-time-to-push-dispute-resolution-online-120032901023_1.html)> accessed 30 March 2020

During the consultation session, one point that emerged distinctly was the need for legislative backing for the temporary and long term measures being taken by the judiciary towards establishment of virtual courts. In addition to amending the necessary existing laws, an overarching legislation must also be enacted to sanction virtual courts. Currently, there are procedures which do not find the required backing of law (for instance, converting a judicial residence into courtrooms). The specific law will need to address the numerous issues emerging from the gradual use of technologies, and establishment of virtual courts. The Supreme Court can only effectuate guidelines. A more substantive mandate must come from the legislature.

Further, for the immediate needs of the judiciary as well as the litigants, guidelines could be issued to encourage court annexed ODR through ADR methods, specifically for labor, family and commercial disputes as seen in Hong Kong and China.

There needs to be a legislative framework to back the transition towards virtual courts. The primary argument which is, quite fairly, put forward is that efficiency and speed do not necessarily guarantee justice.<sup>42</sup> The principles of natural justice require a human assessment of facts and law and consequently, distrust in absolute reliance on technology is a valid concern. In the rush to create technology driven courts, it is critical that justice driven courts are not compromised. In the next chapter, an impartial assessment is made of the existing framework planning and implementing e-courts project and the technological capabilities achieved under it. As a next step, based on the inputs received during consultation, it goes on to formulate what a suitable implementation authority for virtual courts project could look like.

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<sup>42</sup> Richard Atkinson, 'Virtual courts: more speed, less justice?' (*The Guardian*, 18 July 2012)  
<<https://www.theguardian.com/commentisfree/2012/jul/18/virtual-courts-speed-justice>> accessed 16 April 2020

# II. Technology in Indian Judiciary

The modernisation of the Indian judiciary has been underway since 1990 with attempts at computerisation being initiated by the National Informatics Centre (NIC).<sup>43</sup> While the earlier efforts were restricted to the higher judiciary, the eCourts *mission mode project* (eCourts project), a more recent development within the intersection of technology and the Indian judiciary, ambitiously targeted this integration across all district courts in India. The origin of the eCourts project can be traced back to 2005 when the Supreme Court constituted an E-Committee for Monitoring the Use of Technology and Administrative Reforms in the Indian Judiciary (E-committee).<sup>44</sup> The E-Committee drafted the “National Policy and Action Plan for Implementation of Information and Communication Technology in the Indian Judiciary”<sup>45</sup> which outlined the framework for integrating ICT in district courts in India.

This plan became the bedrock for the eCourts project, which stipulated the adoption of technology in a phased fashion. At the heart of it, like most previous technological interventions and automation drives, the eCourts project aimed for providing cost efficient and time bound justice delivery, and enhancing judicial productivity.<sup>46</sup> The main deliverables of the eCourts project comprise of provisioning of technological infrastructure for ICT enablement of District Courts, including hardware, Local Area Network (LAN), internet connectivity and standardisation of software to be used across these courts. The project has evolved over the years when it comes to the scope, objectives and costs associated with the project. It has undoubtedly allowed significant gains to be made by the Indian judiciary in monitoring of court-wise case pendency, simplifying routine operational activities and providing a digital infrastructure for online service delivery.

## Evaluation of e-Courts project

The eCourts project established the edifice of technological infrastructure for the District and Taluka Courts of India and has transformed the litigation landscape of India in many ways. Chief amongst them is the eCourts website which features numerous litigant-centric services like finding out the case status, electronic cause lists, and easy access to daily orders in PDF formats. From a data gathering perspective, arguably the eCourts project’s greatest accomplishment has been the creation of the National Judicial Data Grid (NJDG).<sup>47</sup>

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<sup>43</sup> Shalini Seetharam, Sumathi Chandrasekaran, 'eCourts in India: From Policy Formulation to Implementation' ( *Vidhi Centre for Legal Policy*, 2016) 1 <[https://vidhilegalpolicy.in/wp-content/uploads/2019/05/eCourtsinIndia\\_Vidhi.pdf](https://vidhilegalpolicy.in/wp-content/uploads/2019/05/eCourtsinIndia_Vidhi.pdf)> accessed 17 April 2020

<sup>44</sup> Ministry of Law and Justice, Office Order (No. L-I 10151212004-Jus, 2004) <<https://main.sci.gov.in/pdf/ecommittee/ecommittee%20officeorder.pdf>> accessed 17 April 2020

<sup>45</sup> E-Committee, Supreme Court of India, National Policy and Action Plan for Implementation of Information and Communication Technology in the Indian Judiciary (2005) <<https://main.sci.gov.in/pdf/ecommittee/action-plan-ecourt.pdf>> accessed 17 April 2020

<sup>46</sup> Ibid 4.

<sup>47</sup> The NJDG is a data gathering portal which tracks pending and disposed cases across all the High Courts, District and Taluka Courts in India, in real time, and has emerged as a significant tool for empirical data collection on court performance <[https://njdg.ecourts.gov.in/hcnjdg\\_public/index.php](https://njdg.ecourts.gov.in/hcnjdg_public/index.php)> accessed 27 April 2020.

The steady increase in the number of e-transactions (from 2,28,75,663 in 2013 to 84,57,91,377 in 2018)<sup>48</sup> indicates the ever-growing reliance on the services facilitated by the eCourts project for various stakeholders in the judiciary.

Phase I of the eCourts project accomplished readying the sites (i.e. district and taluka courts) for integrating technology, installing hardware and LAN facilities, and deploying of software.<sup>49</sup> While both the design and implementation for Phase I was centralised under the control of the E-Committee, for Phase II a more decentralised model was adopted. In this framework the High Courts were given greater flexibility in implementation and were responsible for procurement and dealing with vendors.<sup>50</sup> Interestingly, the eCourts project has also placed reliance on *free and open source software* which is not only in conformity with open data principles, but also saves costs related to payment of license and maintenance fee.<sup>51</sup>

**Table 3: Key Coverage Statistics:**<sup>52</sup>

Districts Covered	Court Complexes Covered	Court Establishments Covered
627	3093	6645

As per the 'Objectives Accomplishment Report', Phase II undertook the migration to a unified Case Information System (CIS), establishment of centralised filing centres, video conferencing (VC) facilities, computerisation of judicial academies, creation of a court management system, installation of cloud computing network, enhanced ICT enablement through e-filing, e-payment, and use of mobile application with a focus of citizen centric service delivery.<sup>53</sup> In August 2018, three applications were launched by the then CJI Dipak Misra which included eFiling, ePay and NSTEP (National Service and Tracking of Electronic Processes).<sup>54</sup> Additionally, *Virtual Courts* have been operationalised under the eCourts project for settling traffic related offences. As part of the eCourts project, virtual courts are being pilot tested for resolving the more mechanical traffic rules' violation cases. Within these virtual courts, each High Court must nominate a *Virtual Judge* who will preside over a virtual court, which has

<sup>48</sup> E-Committee, Supreme Court of India, Annexure to Main Report of Objective Accomplishment Report in Phase II (2019) 35 <[https://ecourts.gov.in/ecourts\\_home/static/manuals/Annexures%20of%20the%20report.pdf](https://ecourts.gov.in/ecourts_home/static/manuals/Annexures%20of%20the%20report.pdf)> accessed 17 April 2020

<sup>49</sup> Department of Justice, Brief on eCourts Project- Phase I and Phase II (2016) <[https://doj.gov.in/sites/default/files/Brief-on-eCourts-Project-\(Phase-I-%26-Phase-II\)-30.09.2015.pdf](https://doj.gov.in/sites/default/files/Brief-on-eCourts-Project-(Phase-I-%26-Phase-II)-30.09.2015.pdf)> accessed 17 April 2020

<sup>50</sup> E-Committee, Supreme Court of India, Policy and Action Plan Document Phase II of the eCourts Project (8 January 2014) 10-12 <[https://main.sci.gov.in/pdf/ecommittee/PolicyActionPlanDocument-PhaseII-approved-08012014-indexed\\_Sign.pdf](https://main.sci.gov.in/pdf/ecommittee/PolicyActionPlanDocument-PhaseII-approved-08012014-indexed_Sign.pdf)> accessed 17 April 2020

<sup>51</sup> E-Committee, Supreme Court of India, Objectives Accomplishment Report as per Policy Action Plan Document Phase II (2019) 5 <[https://ecourts.gov.in/ecourts\\_home/static/manuals/Objective%20Accomplishment%20Report-2019.pdf](https://ecourts.gov.in/ecourts_home/static/manuals/Objective%20Accomplishment%20Report-2019.pdf)> accessed 17 April 2020

<sup>52</sup> National Informatics Centre, eCourts Services Transforming Judiciary for Effective Justice Delivery, Informatics Vol 28 No.1 (July 2019) 22 <[https://informatics.nic.in/uploads/pdfs/340be9b6\\_info\\_julyupdated05082019.pdf](https://informatics.nic.in/uploads/pdfs/340be9b6_info_julyupdated05082019.pdf)> accessed 17 April 2020

<sup>53</sup> Objectives Accomplishment Report (n 51)

<sup>54</sup> Press Information Bureau, 'CJI Launches Applications to Facilitate Litigants and Lawyers' (23 August, 2018) <<https://pib.gov.in/newsite/PrintRelease.aspx?relid=182015>> accessed 17 April 2020, For more information visit: <<https://efiling.ecourts.gov.in>> accessed on 17 April 2020, See Delhi High Court, Practice Directions for Electronic Filing (E-Filing) in the High Court of Delhi <[http://delhihighcourt.nic.in/writereaddata/upload/Announcements/AnnouncementFile\\_UKNURLIT.PDF](http://delhihighcourt.nic.in/writereaddata/upload/Announcements/AnnouncementFile_UKNURLIT.PDF)> accessed 17 April 2020; For more information visit: <<https://pay.ecourts.gov.in/epay/>> accessed on 17 April 2020; E-Committee Supreme Court of India, User Manual National Service and Tracking of Electronic Processes <[https://ecourts.gov.in/ecourts\\_home/static/manuals/NSTEP-User%20manual.pdf](https://ecourts.gov.in/ecourts_home/static/manuals/NSTEP-User%20manual.pdf)> accessed on 17 April 2020

been created to deal with traffic offences.<sup>55</sup> As per the Report, cases from four states Delhi, Haryana, Maharashtra and Tamil Nadu can be settled through the virtual courts' website.<sup>56</sup>

## Limited adoption

The technological infrastructure may have been readied through the eCourts project but leaving aside the timely collection of pendency statistics and automation of some court processes there is little evidence of the other facilities such as VC facilities, e-payment or e-filing facilities being utilised by the relevant stakeholders in the legal system.

As per a report published by the E-Committee in 2019, only 600 filings were done through the e-filing module in the High Courts of Punjab and Haryana and only about 50 e-Filings were done in the Delhi High Court.<sup>57</sup> These represent a miniscule percentage of total filings in the system; by comparison 1.9 lakh cases were instituted through regular method in just the first half of 2019.<sup>58</sup> This indicates that while the infrastructure for e-filing exists, it is severely under-utilised. The reasons for this could range from unfriendly user interfaces, lack of training for actual users to competing interests within the registry. Irrespective, it is clear that these factors have not been accounted for in the planning and implementation framework of the e-courts project, resulting in minimal impact on the overall system.

A group of experts recently acknowledged that long-term behavioural change is needed to ensure adoption of technology in the Indian legal system.<sup>59</sup> It is particularly because of this reason that the Indian judiciary is struggling to cope in times such as these. As per the information given by the Department of Justice to the Department Related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice, videoconferencing facilities have been operationalised in **3240 court complexes and 1272 prisons**.<sup>60</sup> However existence of a facility does not really convey its usage.

The response to the pandemic makes it clear that the judiciary was caught off-guard with regard to technology integration into its routine functioning despite the availability of digital infrastructure. The functioning of most district courts has been suspended during the lockdown period and where courts are functioning, hearings are restricted to extremely urgent matters.<sup>61</sup> Depriving access to the district

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<sup>55</sup> NIC eCourts Services Transforming Judiciary for Effective Justice Delivery (n 52) 24

<sup>56</sup> For more information see: <<http://vcourts.gov.in/virtualcourt/>> accessed 17 April 2020

<sup>57</sup> eCourts India, Innovations: Phase II eCourts Project, 33  
<[https://ecourts.gov.in/ecourts\\_home/static/manuals/FINAL%20INNOVATIONS%20IN%20PHASE%20II.pdf](https://ecourts.gov.in/ecourts_home/static/manuals/FINAL%20INNOVATIONS%20IN%20PHASE%20II.pdf)> accessed 28 April 2020

<sup>58</sup> Jai Brunner, Balu Nair, Digitising Filings, (Supreme Court Observer, 20 April 2020) <<https://www.scobserver.in/beyond-the-court/digitising-filings>> accessed 28 April 2020

<sup>59</sup> Karan Tripathi, 'Embracing Technology Involves a Mindset Issue: Experts Talk About Justice During A Pandemic' (*LiveLaw*, 8 April 2020) <<https://www.livelaw.in/news-updates/embracing-technology-involves-a-mindset-issue-experts-talk-about-justice-during-a-pandemic-154961>> accessed 17 April 2020

<sup>60</sup> Department Related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice, 101th Report on Demand for Grants (2020-2021) of the Ministry of Law and Justice (2020) 34  
<[https://rajyasabha.nic.in/rsnew/Committee\\_site/Committee\\_File/ReportFile/18/125/101\\_2020\\_3\\_13.pdf](https://rajyasabha.nic.in/rsnew/Committee_site/Committee_File/ReportFile/18/125/101_2020_3_13.pdf)> accessed 17 April 2020

<sup>61</sup> See for eg: High Court of Judicature at Allahabad, Notice dated 25 March 2020  
<[http://www.allahabadhighcourt.in/event/event\\_7390\\_25-03-2020.pdf](http://www.allahabadhighcourt.in/event/event_7390_25-03-2020.pdf)> accessed 28 April 2020, High Court of Judicature at Allahabad, 'Letter No. 395/Infra Cell from Registrar General dated 16 March 2020 <[http://www.allahabadhighcourt.in/event/letterToDC\\_16-03-2020.pdf](http://www.allahabadhighcourt.in/event/letterToDC_16-03-2020.pdf)> accessed 28 April 2020, Letter No. No. PS(RG)/44/2020:Allahabad from Registrar General dated 19 April 2020  
<[http://www.allahabadhighcourt.in/event/event\\_7417\\_19-04-2020.pdf](http://www.allahabadhighcourt.in/event/event_7417_19-04-2020.pdf)> accessed 28 April 2020, Calcutta High Court Notification No. 1514 – CPC dated 09 April 2020 <<https://www.calcuttahighcourt.gov.in/Notice-Files/ECOURT/2705>> accessed 28 April 2020, Delhi High Court, Office Order No. 159/RG/DHC/2020 dated 25 March 2020  
<[http://delhihighcourt.nic.in/write/readdata/Upload/PublicNotices/PublicNotice\\_S87QLJ4F47T.PDF](http://delhihighcourt.nic.in/write/readdata/Upload/PublicNotices/PublicNotice_S87QLJ4F47T.PDF)> accessed 28 April 2020, Madras High Court, Circular No. ROC No. 1363/2020/RG dated 24 March 2020 <[http://www.hcmadras.tn.nic.in/COVID-LOCKDOWN\\_CIRCULAR.pdf](http://www.hcmadras.tn.nic.in/COVID-LOCKDOWN_CIRCULAR.pdf)> accessed 28 April 2020, High Court of Punjab and Haryana, Order No. 7/Spl./RG/Misc. dated 13 April 2020  
<[https://highcourtchd.gov.in/sub\\_pages/left\\_menu/publish/announce/announce\\_pdf/distr\\_orde\\_13042020\\_f3810.pdf](https://highcourtchd.gov.in/sub_pages/left_menu/publish/announce/announce_pdf/distr_orde_13042020_f3810.pdf)> accessed 28 April 2020, High Court of Uttarakhand Notification No. 83/UHC/Stationery/2020 dated 24 March 2020  
<<https://highcourtouttarakhand.gov.in/upload/contents/File-677.pdf>> accessed 28 April 2020

judiciary which is the first point of contact for most litigants in the country, compromises the rights of the vast majority of citizens in the country. This is particularly true at a time when the police powers under lockdown have increased substantially. While the guidelines for e-filing and conducting proceedings through video conferencing are in place, the courts at all tiers are working with reduced personnel strength precisely because the judiciary was unprepared for transitioning to digital infrastructure.

## Planning & implementation

Phase I of the project was approved in 2007 with an estimated budget of Rs. 442 crores. Under Phase I of the project the Cabinet Committee on Economic Affairs had approved the computerisation of 13,348 District and Taluka Courts.<sup>62</sup> While it was originally intended to be completed within two years, the project incurred cost and time overruns. Consequently, the scope of the project was enhanced to 14,249 courtrooms and the budget was revised upwards to Rs. 935 crores, which is more than double the original estimate. As studies have pointed out, imprecise budgeting has been one of the deficiencies of the project.<sup>63</sup> The timelines originally contemplated under the project were revised drastically; Phase I which was originally intended to be completed within 2 years took almost 8 years to complete. A project of this scale which requires coordination between multiple authorities would reasonably take a long time and indicates that the original timelines and budgets were not realistically estimated. A recent standing committee report indicated that the total cost of Phase I was Rs. 639.144 crores, which indicates underutilisation when compared to the approved amount.<sup>64</sup>

Phase II of the eCourts Mission Mode project based on the Policy Action Plan devised by the E-Committee in 2014 was approved by the Government in 2015 with a budget estimate of Rs 1670 crores.<sup>65</sup> Against this allocation as per data provided on the eCourts website, a total of Rs. 955.82 crores have been released out of which only Rs 716.42 crores has been utilised.<sup>66</sup> Table 2 shows that over the years, the trend of under-utilisation has only grown.

Table 2:<sup>67</sup>

Financial Year	Funds Released in crores (Rs.)	Funds Utilised in crores (Rs.)
2015-2016	202.23	198.02
2016-2017	326.79	266.93
2017-2018	347.65	240.13
2018-2019	77.71	11.37

Budgeting and planning in the judiciary has been one of its weakest capabilities. While there has been a demand for greater autonomy for the judiciary in financial planning, there is fundamental shortcoming in the way judiciary handles its administration, which includes budgeting and planning for its various

<sup>62</sup> Brief on eCourts Project (n 49)

<sup>63</sup> Shalini Seetharam, Sumathi Chandrasekaran (n 43) 14-17

<sup>64</sup> Standing Committee Report (n 60)

<sup>65</sup> Ministry of Law and Justice, Sanction Order (F. No. 15018/3/2014-Jus-II, 2015) <<https://doj.gov.in/sites/default/files/Order-for-eCourts-Phase-II.pdf>> accessed 17 April 2020

<sup>66</sup> Annexures, Objectives Accomplishment Report (n 51) 345- 346

<sup>67</sup> *ibid* 14

needs.<sup>68</sup> The need for administrative reforms within the judiciary cannot be stressed enough. The concentration of administrative and judicial functions in the judicial officers has been a root-cause for inefficiencies on the administrative side, which eventually manifests into delays and pendency on the judicial side.<sup>69</sup> Unfortunately it is in times like the current ongoing crisis that the pinch of this is most severely felt.

To illustrate, *digitization of records*, which is critical in facilitating the transition to virtual courts, was a planned activity under Phase II of the eCourts project. However, it was never provisioned for or carried out under the eCourts project due to an assumption that the XIV Finance Commission had provided a separate Rs. 752 crores for the same.<sup>70</sup> However this assumption proved to be misplaced because the XIV Finance Commission, in its recommendations, had merely urged the state governments to budget for digitisation of records rather than sanctioning a grant to the states for the activity.<sup>71</sup> It is unclear how many state governments, if at all, have budgeted for the same. Due to this misunderstanding, a key requirement which could have eased a lot of pain-points that the judiciary is currently experiencing in terms of documents sharing, storage and e-filing, could have been avoided.

During the consultation session, several such issues such as lack of co-ordination between the government and the judiciary and within the judiciary between e-committees of the Supreme Court and High Courts were discussed. In addition, it was also mentioned that lack of representation of experts in the field of technology, finance, management etc. severely restricts these committees' ability to take well informed decisions. As a permanent solution to these problems, we recommend delineation of administrative and judicial functions in the long run by establishing a separate administrative wing, which works under the overall supervision of Judges, but is empowered to plan, implement and take decisions for day to day functioning of the courts.

However, to look for fixes for judiciary's immediate needs, the next section gives an overview of the structure and composition of authorities incharge of eCourts project and proceeds to identify possible alternatives to the existing framework.

## Implementation framework for eCourts project

The eCourts project adopted a mission mode, steered by the Supreme Court E-committee (**eCommittee**) at the helm of affairs. The eCommittee is a body constituted by the Government of India and the Supreme Court of India, implementing the eCourts project in courts across the country. As per phase II of the policy action plan; the following is the composition of the committee across the three

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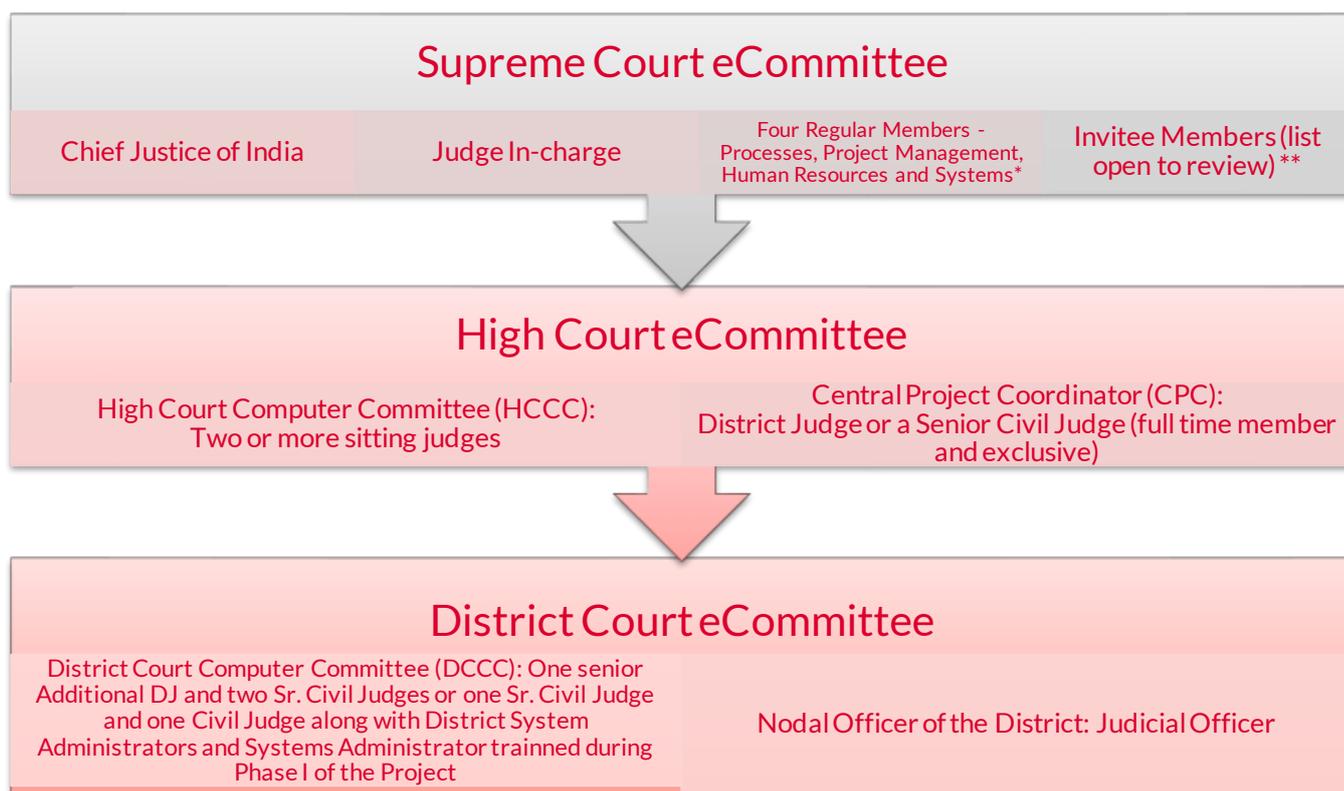
<sup>68</sup> Chitrakshi Jai, Tarika Jain and et al., 'Back to Basics: A Call for Better Planning in the Judiciary' (*Vidhi Centre for Legal Policy*, February 2019) <<https://vidhilegalpolicy.in/2020/03/27/back-to-basics-a-case-for-better-planning-in-the-judiciary/>> accessed 28 April 2020

<sup>69</sup> Pratik Datta, Mehtab Hans et al. 'How to modernize workings of courts and tribunals in India' (*National Institute for Public Finance and Policy in India*, 25 March 2019) <[https://www.nipfp.org.in/media/medialibrary/2019/03/WP\\_2019\\_258.pdf](https://www.nipfp.org.in/media/medialibrary/2019/03/WP_2019_258.pdf)> accessed 28 April 2020

<sup>70</sup> Objectives Accomplishment Report (n 51) 28-29

<sup>71</sup> XIV Finance Commission, Report of the Fourteenth Finance Commission, 152 para 11.44 <<https://smarnet.niua.org/sites/default/files/resources/14fceng.pdf>> accessed 17 April 2020

levels of the judiciary.<sup>72</sup> Judge in charge eCommittee and CJI have been authorized to invite or co-opt additional members, depending upon the subject to be discussed, which includes taking consultants on board on a requirement basis. As a common trend, it is also seen that members of the eCommittee have included member judges of the Supreme Court as well.<sup>73</sup>



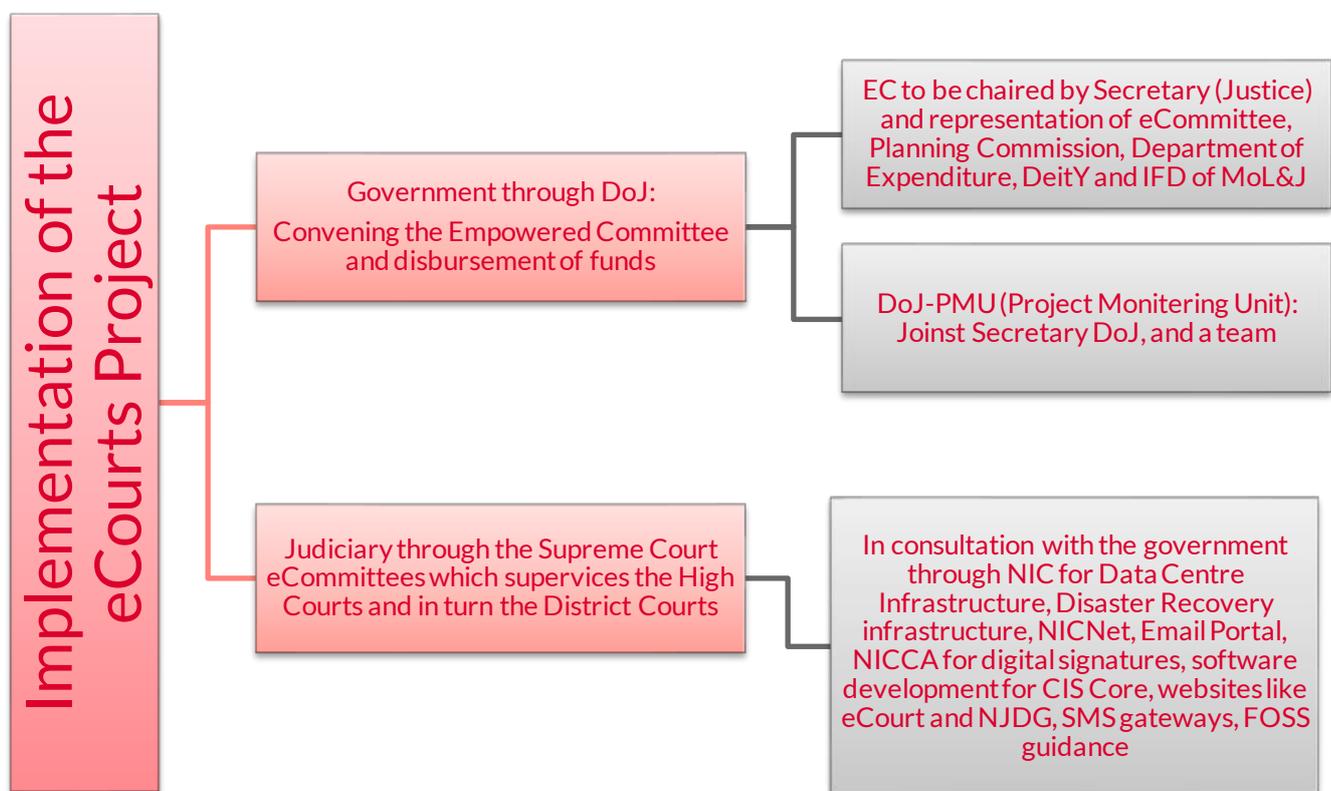
\* Members Processes, Project Management, Human Resources are judicial officers called on deputation, generally of the rank of a District and Sessions Judge. Member Systems is an officer on deputation or on post retirement assignment of the rank of Deputy Director General, NIC (or equivalent)

\*\* Can include - Attorney General for India (ex-officio) (ii) Solicitor General of India (ex-officio) (iii) Hon'ble Judge from any High Court (iv) Sr. Advocate, Supreme Court of India (v) Representative of Bar Council of India (vi) Secretary General, Supreme Court of India (ex-officio) (vii) Secretary, Department of Electronics and Information Technology, Govt. of India (ex-officio) (viii) Secretary, Department of Justice, Govt. of India (ex-officio) (ix) Mission Director, eGovernance, DeitY (ex-officio) (x) Director General, National Informatics Centre (NIC) (ex-officio) (xi) Director General, Centre for Development of Advanced Computing (CDAC) (ex-officio) (xii) Joint Secretary (Plan Finance II), Department of Expenditure, Govt. of India (xiii) Joint Secretary and Mission Leader, eCourts MMP, DoJ

However, the eCommittee is not the only implementing authority of the eCourts project. It is informed by the government, through the DoJ and the NIC, in the following manner.

<sup>72</sup> Supreme Court of India, Policy and Action Plan Document, Phase II of the eCourts Project (as approved on 8th January, 2014) <[https://main.sci.gov.in/pdf/ecommittee/PolicyActionPlanDocument-PhaseII-approved-08012014-indexed\\_Sign.pdf](https://main.sci.gov.in/pdf/ecommittee/PolicyActionPlanDocument-PhaseII-approved-08012014-indexed_Sign.pdf)> accessed 27 April 2020

<sup>73</sup> Supreme Court of India, Composition of eCommittee as on 25th February, 2017 <<https://main.sci.gov.in/pdf/ecommittee/Composition%20of%20eCommittee%20as%20on%2025th%20February,%202017.pdf>> accessed 27 April 2020



The above depiction of the implementation structure of the eCourts project highlights the reasons behind slow integration and adoption of technology in the judiciary. They are:

- Between the Government and the Judiciary, there is little scope left for experts from outside to contribute. In addition to the technology expertise that NIC brings in, there is a need for other experts from management, behavioural science, design and systems thinking, to contribute to the making of a holistic framework and roadmap for technology integration across all levels of judiciary.
- Lack of dedicated body whose fundamental objective is to think and cater to the evolving needs of the judiciary as a system and its individual stakeholders. The composition of eCommittee is judge centric, for whom modernisation of judiciary is perhaps one of the several other duties, most Important being adjudication of cases. NIC on the other hand caters to both judiciary's and government's needs.

Given the shortcomings in the manner in which eCourts project has been planned and Implemented, combined with the urgent needs of the judiciary at the moment, the following proposal is put forth for consideration.

## Implementation Framework for Virtual Courts

To make a consolidated push towards establishing functional and sustainable virtual courts in India, it is imperative to create a dedicated organisation steering this drive. In other countries too, similar technological drives within their respective judiciaries have been undertaken under the auspices of dedicated governing bodies. For instance, in the United Kingdom, Her Majesty's Courts and Tribunal Services (HMCTS) is working on an ambitious reform programme to introduce new technology and

modern ways into the functioning of the UK judiciary.<sup>74</sup> The organisation is guided by the office of Chief Executive and the Board to deliver the aim and objectives of the programme.<sup>75</sup> The agency receives inputs from a range of stakeholders and partner organisations.<sup>76</sup> Further, in Singapore, the integration of technology in the judicial system began in 1990. The process was led by the Supreme Court and was guided by representatives of the bar, judges, technological experts<sup>77</sup> and various technology vendors.<sup>78</sup>

From our consultation session, we were informed that the eCommittee had also attempted to create a permanent group of professionals, recruited by every District Court and High Court in the country. However, despite funds being made available to carry out these recruitments, eventually only a few High Courts attempted this process, resulting in its failure. In this background, it is proposed, to make a concerted effort for establishing virtual courts, a *Steering Committee* be constituted immediately and an authority be established under law in the long run.

However, to avoid a similar fate as seen above, the Steering Committee should eventually lead to establishment of an Authority ordained through an act of the Parliament. Similar bodies have been established previously; for instance, the Unique Identification Authority of India (UIDAI) was established under the Aadhaar Act, 2016. The benefit of establishing an independent statutory body are multifold:

- with the law prescribing role, powers, functions, and objectives of such an authority, a more formal and institutionalised framework can be provided to undertake administrative and more specifically, technological reforms in the judiciary.
- the law also ensures legal remedy may be invoked against such an entity should it fail to adhere to its statutory mandate. This creates a definitive and permanent framework, while also promoting accountability for its actions.
- the rigidity and the conservative nature of the judiciary have prevented it from reaping benefits of the best technology or the brightest minds in the country. A separate authority engaging with experts through sufficient checks and balances, while being ultimately accountable to the judges, will provide a good mix of flexibility and accountability in undertaking reform measures.
- such an authority can be ambitious and creative in inviting external experts to contribute to the system without affecting judiciary's image as an impartial and independent body.

The judiciary must however lay down a robust principles' framework to guide any technology integration into courts. The fact that the judiciary is forced to severely compromise on open courts principle, transparency and data security while conducting virtual hearings is well known. Therefore, to avoid similar mishaps while building anything customised for the judiciary, a set of uncompromising principles have been charted out in the next chapter. These should guide all modernisation efforts in the judiciary irrespective of the nature of the body undertaking such efforts.

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<sup>74</sup> HMCTS reform programme (n 13)

<sup>75</sup> HM Courts and Tribunals Service Framework Document (n 14)

<sup>76</sup> 'HM Courts and Tribunals Service engagement groups' (4 October 2018) <<https://www.gov.uk/guidance/hm-courts-and-tribunals-service-engagement-groups>> accessed 16 April 2020

<sup>77</sup> 'Singapore Judiciary to Make E-Justice a Reality' <<https://www.supremecourt.gov.sg/news/media-releases/singapore-judiciary-to-make-e-justice-a-reality>> accessed 16 April 2020

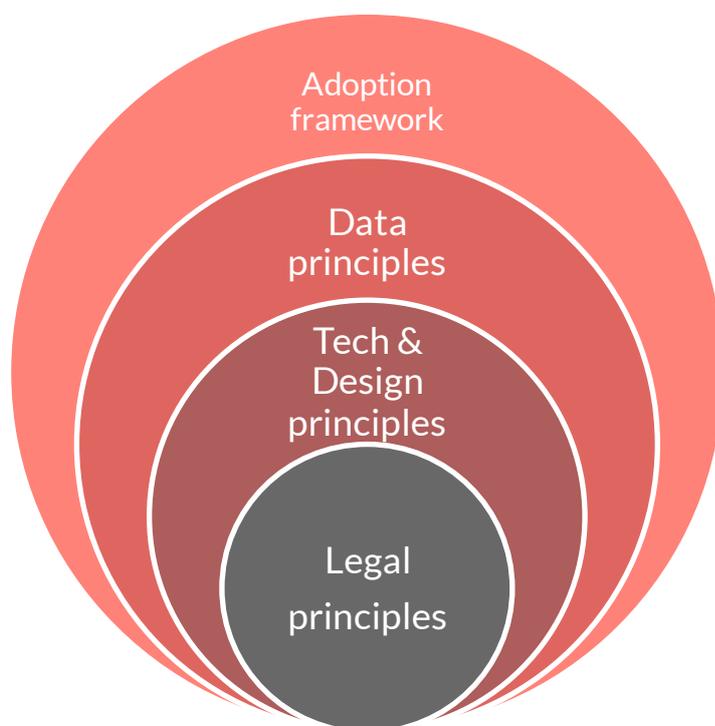
<sup>78</sup> 'The Evolving Role of Electronic Case Management Systems' (IV Judicial Seminar on Commercial Litigation, 2013) <<https://www.supremecourt.gov.sg/Data/Editor/Documents/The%20Evolving%20Role%20of%20Electronic%20Case%20Management%20Systems.pdf>> accessed 16 April 2020

# Principles Framework

The Supreme Court through a set of guidelines<sup>79</sup> has authorized all the High Courts to adopt measures required to ensure robust functioning of their respective judicial systems, by employing video conferencing technologies. Such delegation leaves a lot of wriggle room for the High Courts to come up with solutions that tackle their peculiar issues and respond to emerging problems with immediacy. However, such a situation also results in a knee-jerk adoption of technology tools which while addressing immediate needs, have already posed a risk of violating certain fundamental principles.<sup>80</sup>

To create solutions for institution as gigantic and diverse as the judiciary, access to some key resources such as expert knowledge, technology and data is important at every stage of development. The following section is based on consultations with experts in the fields of law, technology, design and systems thinking. A key learning from such consultation is the need for a governing *principles' framework* in three tranches- law, technology & design and data, against which solutions can be tested both in the short and the long run.

The following section encapsulated key principles that need to govern all technology infusion in the judiciary; and they are presented under three headings: Constitutional and legal principles; Technology and design principles; and Data design principles.



<sup>79</sup> The Supreme Court of India, In Re: Guidelines for Court Functioning through Video Conferencing During COVID-19 Pandemic <[https://main.sci.gov.in/supremecourt/2020/10853/10853\\_2020\\_0\\_1\\_21588\\_Judgement\\_06-Apr-2020.pdf](https://main.sci.gov.in/supremecourt/2020/10853/10853_2020_0_1_21588_Judgement_06-Apr-2020.pdf)> accessed 23 April 2020

<sup>80</sup> Ashish Tripathi, 'Kerala side alleges SC 'did not hear us' in inter-state border matter' (*Deccan Herald*, 08 April 2020) <<https://www.deccanherald.com/national/south/kerala-side-alleges-sc-did-not-hear-us-in-inter-state-border-matter-822682.html>> accessed 23 April 2020

# Constitutional and Legal Principles

## Principle 1: Speedy justice and reducing judicial delay

The Supreme Court in the 1979 case of *Hussainara Khatoon v Home Secretary, State of Bihar*, for the first time, held that an individual had a fundamental right to a speedy trial under Article 21 of the Indian Constitution.<sup>81</sup> A delay in disposal of cases, in such a situation, amounts to a denial of this fundamental right. It is for this reason that the Supreme Court recognized, in the case of *All India Judges' Association v. Union of India*, that there is a constitutional obligation of the Court to ensure that the backlog of cases is decreased and efforts are made to increase the disposal of cases.<sup>82</sup> As a consequence, both the government and the judiciary on multiple occasions have taken steps to reduce pendency and delays in the judicial system.<sup>83</sup> Following such a precedent, even the use of technology is not merely to digitize processes as an end in itself, but in furtherance of the cause of reducing judicial delays.

## Principle 2: Equal access and non-discrimination

It is essential to translate the rights to equality, inclusion and non-discrimination, enshrined in the Constitution, into the virtual and digital world as well.<sup>84</sup> The introduction of virtual courts has often been held synonymous with increased accessibility. However, they presume a familiarity with access to technology in its various forms. Further, the lack of reliable high-speed Internet continues to work as a barrier for a significant proportion of the Indian population. Access to the internet does not ensure access to all forms of technological solutions that are on offer. Familiarity with a digital vocabulary and skills required for utilizing its associated technology are gained through repeated interactions leading to familiarity in dealing with services offered online. To ensure further inclusive access, it is also important for such tools to comply with the accessibility norms under the Rights of Persons with Disabilities Act, 2016, and cater to the requirements of linguistic minorities.

## Principle 3: Fairness and due process

While one of the most compelling reasons for introducing technology is increasing efficiency and having expedited procedure, it cannot be achieved at the cost of due process.<sup>85</sup> One of the facets of due process is providing individuals immunity from unreasonable search or seizure of their papers, which ought to include information that is digitally maintained, for example on mobile phones or communication applications, without a warrant based on probable cause.<sup>86</sup> Therefore mechanisms have to be put in place to ensure that the courts only access documents and communications that are not readily accessible to the public, only as per procedure established by law. Information on non-publically

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<sup>81</sup> *Hussainara Khatoon v Home Secretary, State of Bihar* (1980) 1 SCC 98 <<https://indiankanoon.org/doc/1373215/>> accessed 19 April 2020

<sup>82</sup> *All India Judges' Association v. Union of India* (2002) 4 SCC 247 <<https://indiankanoon.org/doc/1245776/>> accessed 19 April 2020

<sup>83</sup> Law Commission of India, 77th Report: Delays and Arrears in Trial Courts (1979), 79th Report: Delay and arrears in High Courts and other Appellate Courts (1979), 124th Report: The High Court Arrears – A Fresh Look, 245th Report: Arrears and Backlog: Creating Additional Judicial (wo)man power (2014), Law and introduction of the National Mission of Justice Delivery and Legal Reform <<https://doj.gov.in/national-mission-justice-delivery-and-legal-reforms>> accessed 23 April 2020 and National Court Management System Committee. Also see, Jayant Krishnan and C. Raj Kumar, 'Delay in Process, Denial of Justice: The Jurisprudence and Empirics of Speedy Trials in Comparative Perspective' (2011) 42 Georgetown Journal of International Law 747.

<sup>84</sup> See *Navtej Singh Johar v Union of India* AIR 2018 SC 4321 <<https://indiankanoon.org/doc/168671544/>> accessed 23 April 2020; *Air India v Nargesh Mirza* AIR 1981 SC 1829 <<https://indiankanoon.org/doc/1903603/>> accessed 19 April 2020 also see Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013

<sup>85</sup> Generally see, Divij Joshi 'Search and Seizure and the Right to Privacy in the Digital Age: A Comparison of US and India' ( *Centre for Internet and Society*, May 2014) <<https://cis-india.org/internet-governance/blog/search-and-seizure-and-right-to-privacy-in-digital-age#fn13>> accessed 19 April 2020

<sup>86</sup> See Kurt Wagnes, 'WhatsApp is at risk in India. So are free speech and encryption' ( *Vox*, 19 February 2019) <<https://www.vox.com/2019/2/19/18224084/india-intermediary-guidelines-laws-free-speech-encryption-whatsapp>> accessed 19 April 2020. Also see, 4th Amendment, Constitution of the United States

available government databases shall therefore not be susceptible of being mined for information by the judiciary.

## **Principle 4: Adherence to principles of natural justice**

One of the key principles of natural justice is that all parties should be given fair and equal hearing. It is for this reason that possibilities of an implicit bias need to be kept under check. In a situation where one of the participants is virtually present and another participant is physically present in the courtroom, there can be an implicit bias in favour of the individual being physically present, as is the case with remote witness testimonies. This can often be the case as short audio delays and interruptions form a common feature of communications through electronic mediums. Additionally, easy virtual access to the judges also introduces the risk of malfeasance, with the possibility of one of the parties having confidential access to a judge or having access to a judge for greater amounts of time, than the other party, owing to technical lags and delays. A just virtual courts framework shall account for such possibilities and put in place safeguards to ensure adherence to principles of natural justice.

## **Principle 5: Open justice and algorithmic transparency**

Given that the courtroom is a public space, it follows that its associated framework – pleadings, judgments, proceedings, laws and statistics be accessible to everybody without restrictions.<sup>87</sup> In fact, the fundamental principles of open justice are an established part of common law as visible in the case of the United Kingdom which, in its legislation, the Coronavirus Act, 2020, accommodates such an open courts principle by making specific provisions for broadcasting and recording court proceedings, conducted via video conferencing.<sup>88</sup> Even the Supreme Court in the *Swapnil Tripathi* case, has held that the live audio-video streaming of court proceedings is merely an extension of the ‘open court’ principle which is a well-accepted principle in India.<sup>89</sup> Live streaming of proceedings in particular, hold educational value for law students, advocates and academicians, especially in a country like India - where they can provide access to the various litigation cultures across High Courts. While maintaining the limitations of confidentiality, the judiciary can revolutionise the concepts of accountability and transparency by opening up the judiciary and complying with the principles of open justice.

The use of artificial intelligence can often lead to further opacity in identifying the variables that change the outcomes. In this context, algorithmic transparency can inform people of the variables that influence the systems and alter outcomes.<sup>90</sup> Periodic external technical audits can provide a transparent window to reassess factors that might be drastically affecting outcomes. Such efforts at ensuring transparency directly correlate to increased accountability of the judiciary to the society at large.

## **Principle 6: Privacy and Data protection**

With greater reliance on the virtual world, the judiciary would be in possession of very large databases of information. Thus, in addition to the principle of open courts, the judiciary will also have to make simultaneous efforts to balance those interests by ensuring data protection. The experience with applications such as Zoom suggests that data leaks pose a major data protection issue, which need to be

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<sup>87</sup> Prashant T. Reddy and Tarika Jain et al., *Open Courts in the Digital Age: A Prescription for an Open Data Policy* ( *Vidhi Centre for Legal Policy*, November 2009) <[https://vidhilegalpolicy.in/wp-content/uploads/2019/11/OpenCourts\\_digital16dec.pdf](https://vidhilegalpolicy.in/wp-content/uploads/2019/11/OpenCourts_digital16dec.pdf)> accessed 16 April 2020

<sup>88</sup> Coronavirus Act 2020 <<http://www.legislation.gov.uk/ukpga/2020/7/contents/enacted>> accessed 16 April 2020

<sup>89</sup> *Swapnil Tripathi v Supreme Court of India* (2018) 10 SCC 639 <<https://indiankanoon.org/doc/43629806/>> accessed 19 April 2020

<sup>90</sup> Jake Goldenfein, 'Algorithmic Transparency and Decision-Making Accountability: Thoughts for buying machine learning algorithms' in Office of the Victorian Information Commissioner (ed), *Closer to the Machine: Technical, Social, and Legal aspects of AI* (2019) <<https://ssrn.com/abstract=3445873>> accessed 16 April 2020

resolved before virtual courts become a reality.<sup>91</sup> Some pieces of evidence submitted to the court can contain very personally sensitive information, much of which can be commercially sellable. There is thus a need to safeguard these interests of the litigants, to ensure that there are guidelines and standards in place which mandate encryption of documents and evidence submitted. Further, the Supreme Court has already identified the right to privacy as a fundamental right under and the Indian Constitution.<sup>92</sup> There is, therefore, also a need to put in place a stringent privacy policy, by clearly outlining to the parties the methods in which their data is being stored and utilized by the judiciary. The use of artificial intelligence, especially necessitate the right to explanation of the litigants – which allows people subjected to this technology to gain adequate understanding of its functionality and consequences.<sup>93</sup>

## Principle 7: Increased accountability

The Hague Charter for Accountability in the Digital Age imposes a duty for Internet actors to demonstrate the appropriate level of accountability and be responsible for the consequences of their actions and operate within the confines of the rule of law.<sup>94</sup> There is thus a need to impose measures of accountability and system of checks and balances. Accountability to independent institutions can further steer the use of ICT into the judicial system. Such a system can be achieved by increasing transparency in line with the above principles such as disclosure of budgetary information and the disclosure of resources tapped into to acquire the technical know-how used by the judiciary in technology integration.

In the next section, technology and design principles are laid down. It is necessary to emphasize here that a platform based approach would be best for a complex system such as the judiciary. However, given that digital infrastructure has already been built to an extent and there is a need for a few immediate solutions as opposed to a fully developed end-to-end online capability, the following principles have been laid down in order to enable modular integration of technology solutions.

# Technology and Design Principles

## Principle 1: Unbundling and easy adaptation through configurability

Unbundling makes the key services required to solve the problems in a sector available in small sachets. In a diverse, hierarchical judicial structure, it is critical that the technology foundation is nimble enough for High Courts or even individual district courts or tribunals to develop solutions suited for their needs. In addition, designing for configurability makes the key services available to create solutions for changing requirements. At this juncture, where different courts have already integrated technology solution in a piece-meal fashion, principle of unbundling will ensure the progress made is not lost.

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<sup>91</sup> 'Users' email ID, photos may have been leaked on Zoom' Times of India (01 April 2020) <[http://timesofindia.indiatimes.com/articleshow/74924698.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/74924698.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)> accessed 16 April 2020 and Shaswati Das, 'Home ministry red flags Zoom app for cybercrimes' Live Mint (16 April 2020) <<https://www.livemint.com/news/india/home-ministry-red-flags-zoom-app-for-cybercrimes-11587030646715.html>> accessed 16 April 2020

<sup>92</sup> *Justice K.S. Puttaswamy (Retd.) v Union of India* (2017) 10 SCC 1 <<https://indiankanoon.org/doc/127517806/>> accessed 16 April 2020

<sup>93</sup> Margot E. Kaminski, 'The Right to Explanation, Explained' (2019) 34(1) Berkeley Technology Law Journal <<https://ssrn.com/abstract=3196985>> accessed 16 April 2020

<sup>94</sup> Institute for Accountability in the Digital Age, Hague Charter for Accountability in the Digital Age <<https://i4ada.org/>> accessed 19 April 2020

## **Principle 2: Open standards and open source**

Judiciary as a system cannot function in isolation. It has so far adopted a 'catching-up' policy with the developments in the field of technology and design. However, going forward it needs to anticipate the developments that affect processes and outcomes in cases and have its systems open to encourage co-creation of solutions. Tying with the idea of co-creation is ensuring source code is available for users for modification or extension. Equally important is to establish open standards to enable interoperability and extensibility to create new solutions and improve the existing ones to serve emerging needs.

## **Principle 3: Design for replaceability**

Ability to change or enhance a micro-service without impacting rest of the system. This will ensure that the judiciary caters to the ever-changing ecosystem in which it operates. Changes in laws, standards and nature of evidence, subject matter of cases etc. should in turn reflect in the technology framework and solutions adopted.

## **Principle 4: Design for scalability with resilience**

Any solution for the judiciary must be able to serve large number of people under diverse contexts. This also improves the variety and size of data available to customize solutions. However, scalability must be at the back of a robust system which creates trust in its ability to change with the ever-changing ecosystem. The solution should be able to encounter unexpected situations gracefully and evolve.

## **Principle 5: In-built observability**

The principle of observability empowers solution creators to independently understand and use the infrastructure to create relevant solutions. This translates to building a technology layer which allows data emanation from multiple sources that can be used to create a shared understanding of the challenges from different dimensions, predict the challenges and improve the existing solutions.

## **Principle 6: Privacy, security and trust by design**

Privacy and data security features in the rights framework for every citizen in this country as indicated in the previous section. This needs to feature in the nature and manner in which technology solutions are chosen, designed and adopted. Authentication of identity, tamper-proof digital signatures and document storage systems are critical to increase trust in the system. Further, consent mechanisms to store personal data along with collectively acceptable standards to storing data are essential.

# **Data Principles**

Data serves as one of the key products of a digital structure as well as an enabler to derive change. The following data design principles guide the designing of the digital system to leverage data effectively, efficiently and ethically to derive the change.

## **Principle 1: Heterogeneity**

In judiciary, the variety in data is enormous. From data related to cases, registry process to judicial procedures, every data type can be leveraged for improved platform outcomes. The digital framework should be built such that each of these data points are continuously captured.

## **Principle 2: Evolvability**

Each data set has the ability to evolve into metadata which can feed into infrastructure and technology solutions. Therefore, individual data points need to be stored in a way that patterns across the system can be seen and studied.

## **Principle 3: Actionability**

The digital framework should provide ability to explore, analyse, predict and act of data. This implies that the data management systems should be such as to eliminate barriers to access along with ensuring readability of data.

## **Principle 4: Empowerability and equitability**

Ability to democratize access and open data sets to enable every participant in the ecosystem to create value.

## **Adoption Framework**

As was noted in eCourts project implementation, adoption has been a huge roadblock to reap benefits of the technological capabilities already put in place. If efilings and video conferencing facilities have been installed in thousands of courts across the country, it is a travesty that almost the entire population is still denied access to justice in these current times. This is because there have been minimal efforts at creating and informing the value created for each of the actors in the judiciary. Therefore, the next section on adoption framework is extremely critical and active steps should be taken to ensure most, if not all, the suggestions made below feature in the implementation framework. Adoption framework is as important the technology solutions.

## **Restoring Agency**

The technology should enable rather than limit people across different financial, cultural and social context to access the judiciary and effectively interact with it to avail the necessary services. Technology has the potential to bridge the existing barriers between litigants and the judiciary. At present, a litigant is at the mercy of her lawyer or the registry to get basic details such as the date of next hearing in a case, reason for adjournment etc. One of the ways in which agency to each and every stakeholder can be restored is through accessible and usable interface which reduces interdependencies

## **Resolving for diversity**

In a country such as India, any systemic change must account for the diverse nature of the population. This is not to be limited to social, cultural, lingual and financial diversity, but also the differences in needs, wants and capabilities of people across the spectrum. Therefore, the infrastructure should lend itself to easy adaptation through configurability to suit diverse contexts.

## **Inspiring co-creation**

Judiciary is a complex system with each level of hierarchy and in fact, each jurisdiction, having its own set of needs and limitations. A top-down approach both in terms of policy as well as technology solutions might not solve the problems and may worse, add to it. Therefore, it is critical that both in terms of the mindset and in terms of the technology framework, the judiciary facilitates diverse entities to contribute towards solving judiciary's and in turn, societal problems. If this principle is in-built into the ethos of the system, it will enable exchange of ideas and co-creation.

## Feedback and grievance redressal mechanism

Given that the development of such a system shall be a holistic re-hauling across states, involving many stakeholders, initial roadblocks are inadvertent. For this reason, there is a need to set up continuous monitoring mechanisms, with a strong feedback loop and flexibility for an iterative design of implementation. Such a system would record the experiences of all the relevant stakeholders and identify the different roadblocks in implementation on a regular basis. Such a model of executing virtual courts can accordingly be refined to account for the lived experiences of the stakeholders. The existence of disparate implementation frameworks across different states, with their own individual peculiarities provides for a richer database of stakeholder feedback. A continuous feedback loop between such experiences and authorities developing the framework will ensure that the model can respond to the fast-paced technological changes rather than playing catch-up with the technology world.

## Knowledge accumulation and developing modules for training

Systemized cataloging of accumulated knowledge base can lead to the creation of experience modules that can be used by actors across different jurisdictions within India. Further, to ensure adoption and effective use of all the technology solutions, training must be inbuilt into technology and design framework. Intuitive UI/UX, chat bots for quick resolution of queries should be an integral part of the solutions being developed and deployed. It is important that all judges go through training to familiarize themselves with all the tools available at their disposal. Similarly, awareness has to be generated amongst advocates and litigants of the tools, applications, programs and platforms available to them to ensure that better technological know-how does not become a key variable in their ability to access justice.<sup>95</sup> Members of the Registry and court staff will have to undertake continuous training at regular intervals to ensure that they are kept abreast with the latest developments in cataloguing, organization and case management systems, so that they can contribute to efficient systems of justice delivery.

## Varying levels of technological capacity

As detailed in the E-Courts Mission mode project, the level of technological infrastructure and solutions enabled at each tier of the judiciary, is different. For instance, digital display boards outside court halls and online display boards are present at the High Court level, while the same is not true for any district court outside of Delhi. This disparate status of ICT integration must be acknowledged and addressed, especially by any endeavours seeking to uniformise the use of virtual courts in India.

## Subject matter of cases across judicial hierarchy

The nature of cases at different tiers of the judiciary is different. This plays a critical role in choosing the levels of intervention in the immediate, medium and long term. For instance, for most litigants, district judiciary is the first and most easily accessible point to the judicial system. Therefore, it would make most sense to start with solving for access issues to the district courts and courts thereunder. On the other hand, High Courts and Supreme Court have writ jurisdiction which play a critical role in ensuring fundamental rights are not trampled upon by the state, irrespective of the nature of emergency. Given

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<sup>95</sup> Akshita Saxena, "90 % advocates and lawyers unaware of technology": BCI Chairman Writes To CJI Advising Against Continuation Of Virtual Hearings Post Lockdown' (*LiveLaw*, 28 April 2020) <<https://www.livelaw.in/top-stories/90-advocates-and-lawyers-unaware-of-technology-bci-chairman-writes-to-cji-advising-against-continuation-of-virtual-hearings-post-lockdown-read-letter-155917>> accessed 28 April 2020

that resources are limited, it becomes challenging yet necessary to prioritize one over the other, all other issues notwithstanding.

## **Competing interests**

For any change in a conservative and closed institution such as the judiciary, there is bound to be push-back from actors who have benefited from the status-quo. Therefore, planning for change needs to take such competing interests into consideration to account for it and provide for measures to overcome resistance. For instance, lawyers have benefited from the opaque system of listing and granting adjournments. Measures to introduce transparency would be met with resistance either through non-adoption or through active disruption.

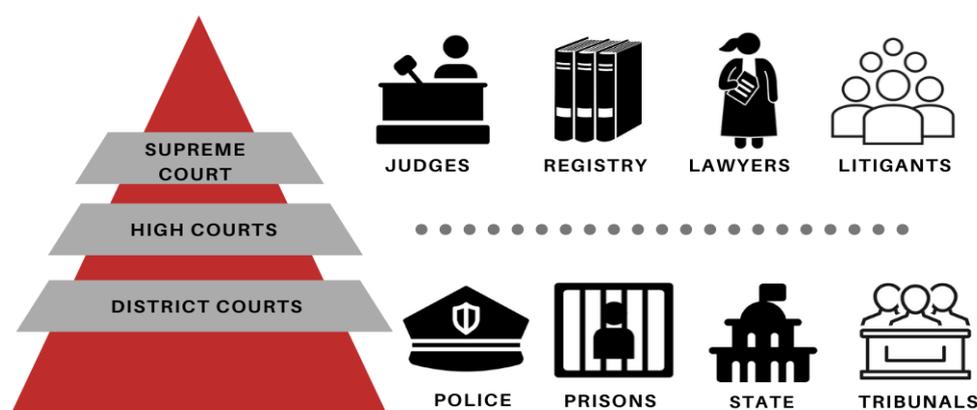
The above set of principles could act as foundational blocks on which prospective technological interventions are conceived, designed, and deployed in Indian courts. The next section dissects the layers of complexities in the Indian judiciary that are likely to influence the institution's journey towards developing complete online capabilities, and sets out actionable measures to accomplish this end goal.

# Roadmap for Virtual Courts in India

The infusion of technology in Indian courts has not necessarily led to increased efficiency. To illustrate, e-filings at the Delhi High Court require that a hard copy of the petition be filed along with a scanned copy with the Registry. Similarly, the new procedure of filing at the Supreme Court, introduced during the course of the COVID-19 lockdown, requires that additional printing costs of Rs. 1.5 per page be paid, so that printing can be done at the end of the Registry and distributed onward to the judges. Therefore, at the core of it, 'digitization' has not really translated into using less paper. It has, in fact, enhanced the courts' reliance on tested methods of documentation and reliance on paper. Digitization efforts, especially within the administration, have only duplicated efforts, since the officials now maintain both physical and digital records of processes. Overall, it wouldn't be a stretch to say that digitization has in fact added to the system's inefficiencies.

A common factor, and possibly one of the biggest drawbacks in both the e-courts mission mode project and the current pandemic induced technology reliance, is the lack of 'systems' thinking' approach. Simply put, *systems' thinking* is a holistic approach to analyse the manner in which a system's constituent parts inter-relate and work overtime, within the context of larger systems.<sup>96</sup> Therefore, as a first step towards adopting a 'systems thinking' approach, in the following segment we identify the significant 'smaller systems' and actors that make the 'judicial system'.

## Systems Overview



<sup>96</sup> Ross D. Arnold and Jon P. Wade, 'A Definition of Systems Thinking: A Systems Approach', 44 *Procedia Computer Science* (2015) 669-678 <<https://reader.elsevier.com/reader/sd/pii/S1877050915002860?token=F168F6AB5D70622871C19B86EACE965D5ACC1E70CF03973B6501E8DF94437717F48C760E0E0F630AA61AA80EA8B245A2>> accessed 29 April 2020



As stated in the principles framework in the previous chapter, adoption to any new technology is possible only when value is created for each of the actors and micro systems listed above. Of the four stakeholders in the judiciary, registry officials across the various branches that handle different stages of a case, are the primary users of any new tool or a reengineered process. If these changes are presented to them as a solution to their problem rather than adding to their burden, there is likely to be greater adoption.

## System Capabilities in Virtual Courts

To begin with, following are the top-level technology capacities in an end-to-end online/ virtual court. These capacities have been mapped against each stage of a case (limited to a typical civil case).

Table 4:

Stages of case	Solutions/ System capabilities per stage
<b>Filing</b>	<p><b>E-filing</b></p> <ul style="list-style-type: none"> <li>- Ability to upload various types of files such as scanned documents, photos etc.</li> <li>- Digital signature to authenticate documents;</li> <li>- Support for multiple languages;</li> <li>- Online payment of court fees;</li> <li>- Documents in searchable PDFs</li> <li>- Easy retrieval and indexing</li> <li>- Scrutinizing and ability to correct documents online</li> </ul>
<b>Notice</b>	<ul style="list-style-type: none"> <li>- E-notice framework comprising of issuing notices through e-mail, WhatsApp or any other modes of digital communication</li> <li>- Ability to capture proof of service of notice</li> <li>- Ability to store and retrieve information on individual systems</li> <li>- Digital summons registry (to replace substituted notice in newspapers)</li> <li>- Tracking system for process servers (N-step v.2)</li> <li>- Giving access to consolidated publicly accessible databases to the registry</li> </ul>
<b>Respondent's pleadings (Written Statement)</b>	<ul style="list-style-type: none"> <li>- Same capabilities as filing;</li> <li>- Multiple party upload facility per case;</li> <li>- Easy storage and retrieval system per party</li> </ul>

Stages of case	Solutions / System capabilities per stage
<b>Third Party Applications</b>	<ul style="list-style-type: none"> <li>- System should enable third party pleadings.</li> <li>- Registry to be the filtering authority</li> </ul>
<b>Evidence</b>	<ul style="list-style-type: none"> <li>- Verification of authenticity</li> <li>- Digital signing</li> <li>- Tamper-proof document storage system</li> </ul>
<b>Hearings Chief and Cross Examination</b>	<ul style="list-style-type: none"> <li>- Video conferencing</li> <li>- Live-streaming</li> <li>- Ability to share screens, exchange files, during proceedings</li> <li>- Transcription</li> <li>- Room for stenographer</li> </ul>
<b>Orders/ judgments</b>	<ul style="list-style-type: none"> <li>- Authentication</li> <li>- Templatised orders to improve efficiency</li> <li>- Embedded research assistance tools for Judges (to replace bulky bare acts and case law journals typically seen in a court room)</li> </ul>
<b>General system capabilities across all the above stages</b>	
<b>Digitizing registry processes (Case Management systems)</b>	<ul style="list-style-type: none"> <li>- Tracing mechanism (through QR coding etc.) for physical and virtual files</li> <li>- Daily orders, especially the ones of adjournments to be made public</li> <li>- SMS/ E-mail/ WhatsApp alerts to parties about case progress</li> </ul>
<b>Document management</b>	<ul style="list-style-type: none"> <li>- Easy storage and retrieval system for various kinds of documents and files</li> <li>- Machine readable, indexed documents for data collation</li> </ul>
<b>Smart Scheduling/ Listing</b>	<ul style="list-style-type: none"> <li>- Calendar integration for judges, registry, lawyers and litigants.</li> <li>- Bringing predictability and efficiency to the system by smart scheduling dates and time-slots for cases.</li> <li>- Using AI/ML tools to list based on urgency/ stage of case / subject matter/ age of case etc.</li> </ul>
<b>Standardize orders/ judgments</b>	<ul style="list-style-type: none"> <li>- Templates for orders and judgements, especially in standard cases under Motor Vehicles Act, Insurance claims etc.</li> <li>- Add judgements and orders to data sets that can be used to evaluate institutional performance.</li> </ul>
<b>Systems evaluation</b>	<ul style="list-style-type: none"> <li>- Constant feed-back loop to enable systems improvement and development of upgraded solutions</li> <li>- Evaluation of performance of all actors- judges, staff and lawyers through data</li> </ul>

From the consultation session, a point that came out strongly was that virtual courts in some form are the other are here to stay. At the same time, it was felt that end-to-end virtual courts will not and ideally, should not, completely replace the 'brick and mortar' court structures. Therefore, all the above listed technology capacities must run in parallel to what exists albeit with extensive process re-engineering and optimization. However, as the judiciary grows in technology capacity and is able to cater to large volumes of disputes, the question that might arise is whether the judges and the staff required to conduct online dispute resolution, would be separately appointed and trained.

## Parameters for prioritization

In an unenviable situation that the judiciary has found itself in, due to the COVID-19 induced lockdown, it is difficult to prioritize actionable points. Ofcourse, to keep the system minimally accessible, virtual hearings and e-filings facilities have been opened up in a few courts. However, even there, it is clear that there are several hurdles in terms of technology feasibility and viability of certain choices in the long run. In this context, we have mapped the above system capabilities against four parameters- *urgency, impact, feasibility and viability*. This framework should guide the judiciary in designing a roadmap to cater to its immediate as well as long term needs. First, the meanings of these four terms:

1. **Urgency** - Given the pandemic induced resort to technology solutions, the judiciary has activated two key features to a limited in a few courts – e-filing and VC hearings. At this juncture, urgency is defined by two facets- one, the front-end and back-end support needed to ensure these two features work effectively; and two, the essentiality of the feature itself. For instance, VC hearings without e-filing effectively cuts off vast sections of population from the judiciary. Therefore, 'urgency index' is also based on the importance of the value associated with the solution.
2. **Impact** – The systems overview depicted above shows four core users across judiciary- judges, registry, lawyers and litigants. Impact is based on the extent of value generated for each of these actors and the system as a whole. It is important to note that within these actors, there are competing interests which might make a solution more beneficial/ detrimental for one over the other. Therefore, at the stage of planning, 'cost, benefit analysis' per stakeholder needs to be carried out. The 'Impact index' is based on how widespread the benefit of the solution is likely to be across all actors.
3. **Feasibility** – The systems capability table above captures technology solutions across different complexity levels. For instance, rudimentary VC facility is a mature solution that could easily be plugged into the existing infrastructure. However, machine readable documents, though critical, is a slightly more complex solution given that the documents could be in varied formats, and in large volumes. 'Feasibility index' is based on the complexity of technology solutions required.
4. **Viability** – A solution can be effective only if it is adopted by every stakeholder in the system. If for reasons of complex design or lack of infrastructure at user's end or loss of power due to technology, the solution is unlikely to be widely adopted, it is ranked lower in viability index. Essentially, viability index considers the potential roadblocks to adoption.

## Systems capabilities mapped across parameters:

System Capabilities	Urgency	Impact	Feasibility	Viability	Overall score
E-Filing	High	High	Medium	High	High
E-Notice	Medium	Low	Low	Low	Low
Virtual Hearings	High	High	Medium	High	High
E-Evidence	Low	Medium	Medium	Medium	Medium
Digitizing Registry (Case Management Systems)	Medium	High	Medium	Low	Medium
Authenticating orders and judgments	High	High	Medium	High	High
Document retrieval and management	High	High	Medium	Medium	Medium
Smart Scheduling & Listing	Medium	High	High	Medium	Medium
Standardized orders/ judgments	Low	Medium	Low	Medium	Low

The above table indicates that a high grading for 'feasibility index' is likely to move a solution lower down the prioritization framework even if the solution ranks high on all other parameters. This also highlights the need for opening up the judiciary for collaboration and co-creation. Private sector has moved ahead in having built and scaled mature technology solutions in each of the aspects listed above, from robust documents management systems to smart scheduling systems. This pandemic has forced the judiciary to rely in an ad-hoc manner on third party SAAS providers such as Zoom, Google Hangouts etc. However, this approach needs to be more institutionalized so that proper checks and balances can be exercised even while opening up the system.

The above exercise culminates in the following prioritization framework:

## Prioritization of System Capabilities for Virtual Court

High	Medium	Low
E-Filing	E-Evidence	E-Notice
Virtual Hearings	Digitizing Registry	Standardized orders/ judgments
Authenticating orders and judgments	Smart Scheduling & Listing	
	Document retrieval and management	

Even with the solutions listed under “High” priority list, the system needs to ensure that it chooses the best technological solution which adheres to the principles framework along with the adoption framework to create value to all the stakeholders. Ideally, the judiciary must initiate parallel measures towards all the solutions listed above. Fortunately, the judicial system is nimble enough to start with a combination of online and offline processes. This unbundling of individual solutions within the overall framework for virtual courts is critical. For instance, strategy to improve viability index for e-filing solution will be different from that of e-notice. The next step in the strategy framework would be to build individual strategies for each one of the system capabilities and this is illustrated by zooming in on capability- E-filing.

## Strategy for E-filing

E-filing			
Specific capabilities	Jurisdiction & Timelines	Infrastructure requirements	Strategy for viability
<p><b>Essential features</b></p> <p>Ability to upload various types of files such as scanned documents, photos etc.</p> <p>Digital signature to authenticate documents</p> <p>Online payment of court fees;</p> <p><b>Desirable features</b></p> <p>Documents in searchable PDFs</p> <p>Easy retrieval and indexing</p> <p>Scrutinizing and ability to correct documents online</p> <p>Support for multiple languages</p>	<p><b>Phase I</b></p> <p>Essential capabilities to be made available at all High Courts and the Supreme Court. Since all District Courts do not have e-filing capacity integrated into their systems, temporary measures such as accepting filing to designated e-mail IDs along with guidelines like the one issued by the Supreme Court must be announced for all the District Courts.<sup>97</sup></p> <p><b>Phase II</b></p> <p>Develop systemic capacity to enable e-filing across all district courts in the country along with facilities such as e-filing kiosks in court premises.</p> <p><b>Phase III</b></p> <p>Enroll the <i>desirable</i> features to enhance the overall experience of e-filing and for the system to reap maximum benefits by going completely paperless.</p>	<p>Computers, internet and scanning facilities for lawyers/litigants</p> <p>Large personal screens for individual judges in court halls.</p> <p>E-filing kiosks in all courts.</p>	<p>At the stage of e-filing, there is unlikely to be any systemic resistance from any of the actors. However key steps to take to ensure this contributes to transparency and efficiency:</p> <ol style="list-style-type: none"> <li>1. Detailed instructions, video and audio training modules for lawyers and litigants on the specifics</li> <li>2. Assistance for filing in the initial few months at all courts<sup>98</sup></li> <li>3. After Phase III of features are rolled out, completely do away with manual filing. This will reduce costs, eliminate duplication of work and will be in the interest of environment.</li> </ol>

<sup>97</sup> “Standard Operating Procedure for Ld. Advocate/Party-in-person for Mentioning, e-Filing and Video Conferencing Hearing”, <[https://main.sci.gov.in/pdf/LU/15042020\\_134922.pdf](https://main.sci.gov.in/pdf/LU/15042020_134922.pdf)> accessed 23 April 2020

<sup>98</sup> Similar to manual assistance offered at airports for using a technology interface for as simple a task as printing boarding pass. The system needs to be mindful of a wide spectrum of people accessing the facilities with varying levels of digital literacy and comfort with technology

The above table shows that there are unique requirements and challenges for each of the different capabilities that are essential for realizing the vision of virtual courts. For this ambitious vision to be achieved, a dedicated authority with all relevant experts in technology, management, design, behavioral psychology, should be set up. Significantly, the system should have an embedded feed-back mechanism from all stakeholders along with data-driven evaluation mechanism. This is the only way in which the journey towards virtual courts will be inclusive and robust at every phase of development. Ultimately, it is important to note that the goal of any technology is to aid the judges and the judiciary to perform their core function - dispensing justice, effectively. Both the identification of technology solution and the design of its implementation strategy must always enhance the performance of its key actors- judges, registry, lawyers and litigants, rather than limit them in any form.

## ANNEXURE A

### Requirements of a Prospective Virtual Court solutions

The following considerations are agnostic of the target state implementation and are applicable across solutions being hosted on private cloud or public cloud or on-premise implementations. These considerations are not meant to be exhaustive, but indicative of the non-functional requirements of a virtual court solution.

Principle	Concerns	Information to be sought regarding platform capabilities
<p><b>Transparency</b></p> <p>Extent to which the system processes and policies are readily available and easily accessible for public consumption and legal and technical audit</p>	<p><b><i>Live streaming</i></b></p> <ul style="list-style-type: none"> <li>• How can we ensure visibility over court procedures, except for cases which mandate in-camera proceedings?</li> <li>• How can we ensure adherence to Open Courts principles?</li> <li>• How do we ensure availability of real-time and accurate transcripts of the proceedings?</li> </ul> <p><b><i>Recording of proceedings and documentation</i></b></p> <ul style="list-style-type: none"> <li>• How can we ensure the entire set of court records which is legally required to be in the public domain, is made available?</li> <li>• How do we ensure traceability from recording to the live proceedings?</li> </ul>	<ul style="list-style-type: none"> <li>• Dashboards, Case Lists, Case Listing policy and procedures</li> <li>• Systems for Live transmission of court proceedings</li> <li>• Automated production of live transcripts of proceedings to specified levels of accuracy</li> <li>• Mechanisms to improve accuracy of transcripts</li> <li>• Mechanisms to manage spikes and peak traffic during critical proceedings</li> <li>• Mechanisms to maintain consistent and quality experience for viewers.</li> <li>• Mechanisms to build and maintain an audit trail for recordings to live proceedings</li> </ul>

<p><b>Security</b></p> <p>Extent to which the system is safeguarded against deliberate intrusion from internal and external sources</p>	<ul style="list-style-type: none"> <li>• How well is the system safeguarded against unauthorized access?</li> <li>• How do we ensure protection of data in storage and data in transit?</li> <li>• How do we ensure Application, Services and Infrastructure security?</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanisms for user authentication and authorization.</li> <li>• Application-Program Interface(API) and services security and location</li> <li>• Application, File server, Data and Database security and location</li> <li>• Video conference, chat and such other synchronous and asynchronous communication-server Security and location</li> <li>• Network security and location</li> <li>• Framework guiding balance between personal privacy, security and regulatory compliance</li> <li>• Non-repudiation</li> <li>• Mechanisms for monitoring and logging access to all assets</li> <li>• SSL in conjunction with token-based authentication to secure HTTP streaming</li> <li>• Procedures to prevent simultaneous access across availability zones</li> <li>• Access Controlled Archiving</li> </ul>
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<p><b>Availability</b></p> <p>The degree to which users can depend on the system to be up (able to function) during supported operating times.</p>	<ul style="list-style-type: none"> <li>• How can the system guarantee uptime (say available 99.99% of the operating time)?</li> <li>• How can the impact of non-availability be minimized?</li> <li>• How do we address spikes in demand, irregular consumption pattern while live streaming</li> </ul>	<ul style="list-style-type: none"> <li>• Downtime impact on the system</li> <li>• Partial availability impact on operations (robustness of availability of key functions and features)</li> <li>• Communication of outages to system users</li> <li>• Steps to minimize in real-time, downtime, fail-over zones for redundancy and load balancing</li> <li>• Recovery Point Objective (RPO), Recovery Time Objective (RTO)</li> </ul>
<p><b>Confidentiality</b></p> <p>The degree to which the software system protects sensitive data and allows only authorized access to the data</p>	<ul style="list-style-type: none"> <li>• How are access controls defined?</li> <li>• What is the level of granularity of the access controls?</li> <li>• How do we ensure privacy among multiple communication channels?</li> <li>• How do we ensure common enforcement of confidentiality across multiple client interfaces (mobile, tablets, web browsers etc.),</li> <li>• How do we ensure secure storage of sensitive data across these interfaces?</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanisms to segregate Personal Information (PI), Personally Identifiable Information(PII)</li> <li>• Mechanisms to tag sensitive and critical data elements</li> <li>• Application of strict controls, data masking (Eg. Hash all digits except last four digits of bank account number), and data encryption</li> </ul>

<p><b>Efficiency</b></p> <p>The extent to which the software system handles capacity, throughput and the system's response time</p>	<ul style="list-style-type: none"> <li>• How fast does the system function?</li> <li>• How efficiently does the system take inputs and process outputs? and</li> <li>• How much can be processed at a time?</li> <li>• How do we deal with degradation of bandwidth, video quality?</li> </ul>	<ul style="list-style-type: none"> <li>• Average response time</li> <li>• Throughput</li> <li>• Process capacity, and storage capacity</li> </ul>
<p><b>Integrity</b></p> <p>The degree to which the data maintained by the platform is accurate, authentic, and without corruption.</p>	<ul style="list-style-type: none"> <li>• How do we ensure the data stored is accurate and authentic?</li> <li>• How do we ensure there are no omissions or outages in recorded and live media?</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency and place of backups of data to prevent loss</li> <li>• Data restore procedures</li> <li>• Authenticity of data with respect to the original data source.</li> <li>• Capture of evidence of tampering in real time</li> <li>• Real-time intrusion protection RTMPS to prevent third parties from intercepting streaming content via encryption, thereby ensuring a greater level of data integrity.</li> </ul>
<p><b>Reliability</b></p> <p>The extent to which the software system consistently performs the specified functions without failure.</p>	<ul style="list-style-type: none"> <li>• How does the system respond to errors and delays beyond tolerable limits</li> </ul>	<ul style="list-style-type: none"> <li>• Possible causes of system failure</li> <li>• Preventative actions or procedures necessary to avoid failure</li> <li>• Classification of failures</li> <li>• Reliability metrics</li> </ul>

<p><b>Safety</b></p> <p>The degree to which a software system prevents harm to stakeholders or damage to the ecosystem in the intended context of use.</p>	<ul style="list-style-type: none"> <li>• How well does the system protect stakeholders and the ecosystem from harm?</li> </ul>	<ul style="list-style-type: none"> <li>• Minimizing the damage in case of a hazard</li> <li>• Mechanisms for whitelisting of approved domains</li> <li>• Mechanisms for detection and blacklisting of suspicious accounts and domains suspicious activity including but not limited to spoofing, multiple unauthorized access attempts, access to unauthorized hearing rooms and case discussion, artifacts, directory listing, with detailed logging</li> </ul>
<p><b>Resilience</b></p> <p>The extent to which the software system continues to function and recovers in the presence of a system failure.</p>	<ul style="list-style-type: none"> <li>• How resilient are systems to attacks and systems failures?</li> </ul>	<ul style="list-style-type: none"> <li>• Failure detection techniques</li> <li>• Fault recovery techniques</li> </ul>
<p><b>Usability</b></p> <p>The ease with which the user is able to learn, operate, prepare inputs and interpret outputs through interaction with a software system.</p>	<ul style="list-style-type: none"> <li>• How easy is it to learn and use the system?</li> </ul>	<ul style="list-style-type: none"> <li>• Ease of case entry</li> <li>• Ease of learning to use the system</li> <li>• Likability, and possible metrics</li> <li>• Right to Forget</li> <li>• Portability of personal information and case data</li> </ul>
<p><b>In addition, documentation on the following:</b></p> <ul style="list-style-type: none"> <li>○ Policy Information Points,</li> <li>○ Policy decision points and</li> <li>○ Policy enforcement points</li> <li>○ Enforcement across multiple devices and access channels</li> <li>○ Disaster Management and Recovery Policies</li> <li>○ Business Continuity Planning Policies</li> </ul>		

[www.vidhilegalpolicy.in](http://www.vidhilegalpolicy.in)

**Vidhi Centre for Legal Policy  
43, Residency Road,  
Shantala Nagar, Bengaluru - 560025**

[\*\*vidhi@vidhilegalpolicy.in\*\*](mailto:vidhi@vidhilegalpolicy.in)