Improving E-Justice in Croatia

Technological Possibilities and Socio-Legal Constraints

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1. Introduction

In the last decade, the use of information and communication technologies (ICT) within court systems across the world has expanded rapidly.[1] Document production and storage together with procedures and decision-making has been increasingly digitised[2] and to varying degrees digitalised (although automation remains somewhat limited).[3] The current e-Justice Strategy of the European Union (EU) presses member states to make better use of digital technologies, in accordance with human rights, including the right to a fair trial.[4] In particular, the EU urges member states to take a "digital-by-default" approach, adopt the once-only-principle (avoid redundant procedures/re-use data where lawful), and be user-focused.[5]

During the last decade, the incorporation of ICT within judicial services in Croatia has increased although in uneven fashion. There have been significant advances in digitalising land register information and processes, but it took the COVID-19 pandemic to press actors to use electronic communication and case management in court proceedings where such tools were already lawful and available.[6] The consequence was a dramatic uptake in the use of the e-communications between disputing parties[7] and remote hearings for witness statements in criminal proceedings.[8] Moreover, planned civil procedure reforms in 2022 will increase the potential to extend and optimize the digital transition within the justice system.

With the support of the Norwegian Court Administration, the Ministry of Justice and Public Administration in Croatia commissioned this report by the project team to *gain insight* in development of applicable e-services in other countries and *receive ideas and proposals* on development possibilities within Croatia. The overall aim is to leverage digitalisation to increase the effectiveness, fairness, and public legitimacy of the judicial system.[9] In the report's terms of reference for the report, a particular emphasis was placed on learning from Norway. The project team is therefore from the University of Oslo and the Croatian Ministry of Justice

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[1] See, e.g., Mania (2015), Susskind (2017), Gandhi (2017), Ashley (2017) and Legg and Bell (2020).

[2] *Digitisation* is the process of changing from analogue to digital form, also known as digital enablement.

[3] *Digitalisation* is the use of digital technologies and digitised data to impact how work and social interactions are performed. Over time, the result can be *digital transformation*, which is cross-cutting organizational change and broad use and implementation of digital technologies.

[4] Council of the European Union (2019)

[5] Council of the European Union (2019) para. 11

[6] Uzelac (2021).

[7] Ibid.

[8] Statement provided to the project team, October 2021.

[9] On public concerns with judicial nepotism and corruption, see Gordana Marčetić and Sunčana Roksandić Vidlička, 'Corruption and ethics in public administration in Croatia', in Adam Graycar (ed.) *Handbook on Corruption, Ethics and Integrity in Public Administration* (Edward Elgar, 2020), 345-359.

and Public Administration visited a range of public and private legal technology initiatives in Norway in November 2021. At the same time, the project team has traversed experiences from other countries where relevant and sought continually to take into account the Croatian context. In this respect, the Ministry of Justice and Public Administration in Croatia commissioned from Impri an analysis of citizen experience with the justice sector[10] and the project team conducted a 3-day visit to Zagreb in October 2021.

The focus in this report is on potential ICT innovations in those areas within the Croatian justice sector where the Ministry of Justice and Public Administration has responsibility or influence. This is a rather broad field. The report covers therefore court proceedings, land registers, legal information, and other existing or potential justice-oriented e-services to citizens and organisations. Within these domains, we have sought to survey relevant innovations with a focus on which problems they seek to address and their design/content. In addition, we discuss limitations in terms of effectiveness (e.g., accuracy, cost, user-friendliness, degree of required cultural change), broader legal, technological and ethical issues (e.g., privacy, security, misuse) and conditions for implementation in Croatia (e.g., law reform, user and systems design, cultural change). To be sure, this is demanding given time and space constraints, so we have tried to focus on innovations and limitations that appear most relevant.

The information sources of the project team have thus been four-fold. It has comprised:

- A scholarly and grey literature of global and Croatian sources in English and Norwegian.
- Interviews with key Croatian actors in the justice sector, including judges, advocates, administrators (leadership, legal, IT department, communication), academics, and legal tech start-ups.
- Observation of judicial proceedings in a city court and online investigation of different websites and electronic services.
- The citizen experience report prepared by Impri, which included a survey of 1000 citizens and two focus groups with 13 citizens.

Clearly, all these methods have their limitations, especially given the dynamic nature of the legal technology field and the Croatian judicial context. However, it is hoped that their combination provides some perspective, inspiration, and realism on the way forward.

The report is structured as follows. In section 2, we analyse the potential digitalisation of court proceedings, with a focus on document and case management, video-based proceedings, and digital evidence. In sections 3 and 4, we turn to the more ambitious use of artificial intelligence and blockchain, and identify potential applications within court proceedings/administration, land registries, and other justice services. In section 5, we focus specifically on the provision of legal information, with a focus on case law, legal information, and automatic anonymisation of court decisions. The report concludes in section 6 and the recommendations made throughout the report are collated in section 6.

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[10] See Impri, *Market research on knowledge and attitudes of citizens about e-Services of the Ministry of Justice and Public Administration: Analysis and report of research results*, Zagreb, March 2021; Impri, *Citizens' knowledge and attitudes toward E-services of the Ministry of Justice and Public Administration - Focus Group - Research report*, Zagreb, 2021.

2. Digitalisation of Court Proceedings

2.1 Introduction

The role of ICT in court proceedings can be divided into two categories. The first concerns actors' use of ICT *within* court proceedings. This includes, inter alia, the use of digital solutions to conduct court hearings and the use of online platforms to submit legal claims, upload court documents, and communicate decisions. The second concerns the influence of ICT on the *interpretation* of the rules of procedure, i.e., whereby ICT raises material questions of law. An example is the interpretation of the rules concerning evidence, when the evidence is no longer physical but digital. This part of the report includes both perspectives (sections 2.2 and 2.3) and interpretation of general rules on evidence handling on digital evidence (section 2.4).

2.2 Document and Case Management

2.2.1 Digital Case Management

Case management systems can be physical, digital, hybrid, or parallel. While they may differ in their efficiency, it is clear that a parallel approach, whereby two different systems (physical/digital) operate fully at the same time, is the least efficient. The Croatian courts currently manage the cases in both paper and digital form. Only some paper processing has been fully eliminated, e.g., since early 2020 lawyers have been forced to use *eKomunikacija* (e-Communication) to actually submit documents.

The result of this parallel approach appears to be a considerable loss of efficiency. While it is possible to submit a claim digitally in Croatian courts, through the e-Case system, as soon as the claim is received by the court, it is printed out and a paper-based case file is created. The result is double filing – both paper-based and digital. The same phenomenon is found in the making of the court record from the hearing. When visiting a district court in Zagreb, the project team observed how the court secretary recorded the formal parts of evidence and argument, printed out this record, and placed the document in the paper-based case file as well as saving the file digitally in the electronic case management system.

To be sure, the ability to conduct paper-based proceedings can be important for parties that are not represented by lawyers or where, in a digital transition, information in electronic form is not saved securely or in back-up sites. Moreover, it can be useful to read key documents in paper-based form. However, the conduct of a permanent parallel system of case management seems excessive.

> **Recommendation 1:** We recommend a full transition to digital case management with paper-based aspects limited to identified and justified needs.

2.2.2 Digital Disclosure of Evidence

Legal procedure experts commonly recommend that parties should disclose all evidence in their initial claim or response, see for instance Fabri et al.[11] Early disclosure of evidence gives the parties better overview of the factual basis of the case and contributes to the progress of the case. By disclosure of evidence in civil proceedings, we here refer to the delivery of relevant documents or other evidence to the court and the other side of a legal matter.

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[11] Fabri (2016) p. 12.

To facilitate the disclosure of evidence as soon as possible in legal proceedings, the electronic filing system should support submission of different digital formats and file sizes. This is not the case in Croatia, or Norway for that matter. The Norwegian equivalent to Croatia's e-communication system, *eKomunikacija*, is *Aktørportalen* (Actor Portal). Both electronic filing systems facilitate the disclosure of document evidence in PDF format and, according to a user manual for *eKomunikacija*, it is possible in Croatia to upload Excel spreadsheets.[12]

The result is that both systems exclude significant parts of evidence that may be in digital form. Firstly, evidence might be stored in a video file format. A plaintiff might have, for example, captured by video a key incident. Secondly, evidence might be stored in an audio file format. A defendant might, for example, have an audio recording of a meeting, which they want to present as evidence. According to the user manual for *eKomunikacija* the file size is limited to 20MB[13], which is often too small for audio and video evidence. The electronic filing system should facilitate disclosure of evidence, regardless of file format.

These restrictions are compounded by limited possibilities for presenting digital evidence in oral proceedings. According to one of the interviewees during the visit, and confirmed by another, it is common for administrative staff to print out evidence and material sent via *eKomunikacija* and give it physically to the presiding judge. The result, as described by one lawyer, is a decline in the material quality of evidence, which risks evidence being misunderstood or misinterpreted. For example, a photo loses often its colour and resolution. Thus, court should facilitate the viewing of the evidence by all actors in its digital format, on both personal computers and in larger formats in the courtroom.

> **Recommendation 2:** Facilitate for disclosure of evidence at an early stage by allowing submission of different digital formats and file sizes.
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> **Recommendation 3:** Facilitate viewing of evidence by all actors in its digital format, on both personal computers and in larger formats in the courtroom.

2.2.3 Access for the parties to the e-Communication and e-Case systems

To increase the potential of the digital transition within the justice system the digital case management system should not only be a system for filing court documents and evidence, but also be a platform to communicate on. The website for e-Communication states that it permits remote insight into court cases in which the parties' attorneys are in the proceedings (My cases). However, during the stay in Zagreb, the project team was informed that court documents and evidence and the parties' further communication would not necessarily be visible for the parties when entering the case management system. If this is the case, improving access to this information will gain transparency and strengthen the principle of adversarial proceedings, and make it easier for the judge to keep track of the development in the proceedings.

> **Recommendation 4**: Further develop the e-Communication and e-Case systems, enabling the parties to access relevant information about their case.

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[12] Republika Hrvatska, Ministarstvo pravosuđa (2020).
[13] Republika Hrvatska, Ministarstvo pravosuđa (2020).

2.2.4 Active Case Management

The development of active case management practices in courts accelerated in various jurisdictions in the wake of the English Woolf report, and ICT was identified as an important contributor.[14] Already in 1995, it was suggested that 'on occasions procedural judges might use telephone and video conferences not only for the exercise of general supervisory functions but even for conducting case management hearings.'[15] In the Impri survey, 78,1 % of respondents disagreed or somewhat disagreed with the statement that Croatian courts are efficient[16] and that courts quickly ensure justice.[17] Furthermore, 75,1 % disagreed or somewhat disagreed with the statement that litigation is resolved within a reasonable time.[18] In comparison, 92% of the Norwegian population have very or fairly large trust in Norwegian courts, where 45% state that they have very large trust. Moreover, Croatia has a score of 0.57 on a scale from 0.0 to 1.0 on the Civil Justice factor in *WJP Rule of Law Index*. Regionally in Europe, Croatia is ranked 28 out of 31 countries. In the sub-factor "civil justice is not subject to unreasonable delay" Croatia is ranked last regionally, and ranked 126 out of 139 globally, with a score of 0.24. In comparison, the global average is 0.45 and the regional average is 0.53.[19]

The Norwegian courts' efforts to achieve active case management are helped by a digital case management system called *Lovisa*. *Lovisa* is centred around the case flow. It starts with the registration of the case, suggests tasks and activities for the judge in the specific case, incorporates the decision, and provides templates for various steps. For instance, *Lovisa* gives the judge the task of preparing a civil case. After the defendant has submitted a written reply to the writ of summons, a preparatory meeting shall immediately take place according to the Norwegian act on civil procedure.[20] In other words, *Lovisa* helps the judge, together with administrative and legal staff, in preparing efficiently the case. Only if special circumstances necessitate it, the Norwegian law (Dispute Act Section 9-4) allows the main hearing to be scheduled more than six months after the date of submission of the writ of summons. A task for the judge in *Lovisa* is to schedule the date and length of the main hearing, which is at the latest to be done during the preparatory meeting. According to one scholar, Croatian judges usually do not schedule future hearings at the preparatory hearing.[21]

> **Recommendation 5:** Facilitate active case management (both legally required steps and good practices) through digital incorporation in the e-Case and e-Communication systems.

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[14] Access to Justice, interim report to the Lord Chancellor on the criminal justice system in England and Wales, Lord Woolf, June 1995, London IMSO,

[15] Henderson (1996), p. 47.

[16] "Market research on knowledge and attitudes of citizens about e-Services of the Ministry of Justice and Public Administration" (2021) p. 75.

[17] Ibid. p. 77.

[18] Ibid. p. 75.

[19] https://worldjusticeproject.org/rule-of-law-index/country/2021/Croatia/Civil%20Justice/

[20] Dispute Act Section 9-4

[21] Bratković (2021) p. 183.

2.3 Remote hearings

2.3.1 Introduction

Remote hearings (or 'video-based proceedings'/ 'virtual hearings') are court hearings where one, several or all participants (e.g., witnesses, lawyers, judges, parties) are not present in the physical courtroom, but participate via a video conferencing system.[22] The COVID-19 crisis accelerated the use of remote and video-based hearings in courts in many European countries, hereunder Croatia, and showed how court proceedings can be executed outside the traditional, physical courtroom.[23] The experience showed that more extensive use of remote hearings can increase efficiency and reduce costs in many cases.

During the visit to Zagreb, the project team learned that Croatian court procedures normally consist of several short oral hearings spread over several weeks, months or even years. This was described as a hinder for efficiency and case progression, as lawyers often find it hard to find time for the many short oral hearings in their different cases. It is assumed that a more widespread use of remote hearings could increase efficiency and mitigate some of the problems lawyers are facing in relation to the many oral hearings they have to attend. Therefore, it is advised that the use of remote hearings in Croatian courts is extended and expanded also unrelated to the pandemic.

In implementing and optimizing the use of remote hearings there are several challenges that must be addressed. These are essentially connected to two main areas: legal framework and technical solutions. First, the *legal framework* for video-based proceedings must not only allow for conducting court hearings remotely via video. It must also be adapted and designed to secure fair trial rights.[24] Decisions must be made as to which types of cases and hearings are suitable for remote execution, and which conflicts are better solved when the parties and judges are present in the same physical room. We address these issues in section 2.3.2.

Second, the *technical solutions* must be both user-friendly and protect sensitive data, and access for the public and the media must be facilitated and secured. Courtrooms must be equipped with the necessary videoconferencing equipment that secures the above-mentioned considerations. The general level of IT knowledge, experience and competence amongst staff and court users is also a factor, and good information and training are key. This is elaborated in section 2.3.3. and 2.3.4.

2.3.2 Legal framework for video-based proceedings

When the pandemic forced courts worldwide to limit or even cease regular, physical hearings, many countries started conducting full court proceedings remotely, with none of the participants or only the judge in the courtroom.[25] Some countries were able to use existing legislation for this, while others had to adapt existing laws or introduce new legislation to allow it.

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[22] Sanders (2020) p. 2-3.
[23] Primer (2020) p. 10; Sanders (2020) p. 1.
[24] ECHR art. 6.
[25] Sanders (2020) p. 7; Primer (2020) p. 4.

Croatian legislation already allows for the use of remote participation and video conferencing technology in court to some extent.[26] The legal framework is, however, not designed with the aim of allowing and facilitating for completely remote hearings, and there are few rules regulating how such a process is to be conducted, and for which cases it is appropriate. The project team has learned that according to Croatian law, the judge has to be physically in the courtroom to conduct hearings. This limits the use of remote hearings. It was stated to the team that during the pandemic, the use of video was mostly limited to examinations of suspects on remand due to the 72-hour rule for determining further detention. However, we understand that the greater use of remote hearings is being considered by the civil law procedure reform working group.

There are generally two choices for regulation of remote hearings: adaption of the existing legislation, as occurred for example in Norway, Austria, France and Ireland, or passing new legislation as occurred in for example Switzerland and the UK.[27] A question when regulating video-based proceedings is whether *consent* of the parties or the accused should be required. The European Court of Human Rights has stated that remote hearings without the parties' consent are not in itself a breach of the right to a fair trial in ECHR art. 6.[28] The court emphasized, however, that regard must be held to equality of arms and the adversarial principle when deciding if remote participation of one or several actors is in accordance with the right to a fair trial.[29]

Experiences from Norway show that judges and parties who have participated in remote hearings generally rate these very positively.[30] Remote hearings are perceived to be more straight-forward and efficient, and many participants also found it convenient not having to travel to the courthouse. Despite positive reviews from those who have experienced remote hearings, these are far more rarely used when consent from the parties is required. Therefore, the decision of whether a hearing should be remote or physical should be made by the judge. Clear criteria for when proceedings can be conducted remotely should be established by law. Factors relating to the particular party or defendant, e.g., technical competence and knowledge, available equipment, legal representation or other vulnerabilities must be taken into account. Special caution should be taken when considering "hybrid"-meetings, where only one of the parties participate remotely. This can conflict with the principle of equality of arms and put the remote party at a disadvantage.[31]

> **Recommendation 6:** Facilitate a more widespread use of remote hearings by passing new or adapting existing legislation that gives the judge power to decide whether the hearing will be remote or physical, based on set criteria.

2.3.3 Design and features of the virtual courtroom

A video conferencing system suitable for conducting court hearings must be in place. This system must be designed in a way that secures fair trial rights like the right to a public hearing,

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[26] Sanders (2020) p. 3.
[27] Sanders (2020) p. 7-8.
[28] Jallow v. Norway.
[29] Jallow v. Norway p. 59.
[30] Norwegian Ministry of Justice and Public Security (2020) p. 35.
[31] Sanders (2020) p. 18.

adversarial rights and equality of arms. Video-based proceedings entail a new form of interaction, as the physical and formal framework of the courtroom disappears. Elements like sound and video quality, placement of the camera etc. can affect the fairness of the procedure. The videoconferencing system should be designed to reduce disadvantages following from remote communication.

Croatian courts have already in place a highly developed internal video conferencing system based on Microsoft Teams.[32] This system was used for conducting video-based proceedings where the parties and judges were in different rooms during the pandemic and after the earthquakes when courtrooms were damaged. The use of private owned video conferencing systems like Zoom or Microsoft Teams in court hearings have by some countries been regarded with distrust due to data protection reasons, despite their stability and user-friendliness.[33] In other countries, like the US, this is regarded less problematic. The large private providers in general offer better stability and user-friendliness and develop and adapt the technology faster than government owned and developed systems. If privacy and data security concerns are sufficiently safeguarded, the use of a private provider (e.g., Microsoft, Cisco) may be advisable.

From a user and fair trial perspective, it is important to secure that parties/defendants and witnesses understand the practical arrangements of the video conferencing session, and that they know who the other parties in the virtual courtroom are and their various roles. The virtual courtroom should be designed in a way that makes it easy to separate the participants and see their roles. One measure to secure this is to present the participants' names and roles along with their video frames, which can easily be done in most commercial video conferencing systems. At the Centre on Experiential Legal Learning (CELL) at the University of Oslo (UiO)[34], a virtual courtroom that reflects architecturally the set-up of a physical court has been developed to better reflect actors' roles in court proceedings.

A solution for *confidential client-lawyer communication* during the hearing must also be in place. This can for example be solved with the use of "breakout rooms" in the video conferencing room. Ideally, it should also be possible for confidential communication between some of the participants during the hearing, without the need for such a break. A similar challenge arises when there is need for *interpretation*. In some commercial video conferencing systems, there are integrated interpretation solutions which allow simultaneous interpretation by a manual interpreter via a separate audio-channel. This type of solution could also be a work for client-lawyer communication. There are also providers offering automated translation from voice to text or voice to voice by artificial intelligence. These programs function with other video conferencing systems, but automated translation is not yet integrated in the video conferencing systems from any of the large providers like Zoom or Microsoft Teams, but this is planned.[35]

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[32] Sanders (2020) p. 12-13.

[33] Sanders (2020) p. 14.

[34] Centre on Experiential Legal Learning (CELL) is an expert centre at the Faculty of Law, University of Oslo, working to introduce experience-based learning methods in the Master's Degree in Law. CELL was established in 2018 and was awarded status as a Centre for Excellence in Education in 2019.

[35] Zoom Support (2021); Kan (2021).

The videoconferencing system must enable access to the hearing for the public and media to protect *the right to a public hearing.*[36] This is essential for a transparent, open, and accountable judiciary. This can be enabled through streaming services, such as Youtube, or by letting the audience participate in the virtual meeting room.[37] Video-based proceedings can strengthen the public trust and confidence in the judicial system, as court hearings can be more accessible to the public regardless of physical location. A digital solution can also mitigate security concerns relating to audience, as was expressed to the project team when visiting Croatia. The open streaming solution entails certain privacy issues. Unauthorized recordings are almost impossible to prevent and letting the public join in the meeting room can lead to capacity problems in cases with high media attention.

Remote hearings also entail elements that can affect *the dignity of the courts.*[38] Digital interaction is in general less formal, and experiences show that this also affects how people appear in remote hearings. The virtual courtroom should be designed in a way that establishes a formal and dignified atmosphere, reminding the participants of the occasion, and guidelines on behaviour in remote hearings should be given.

> **Recommendation 7:** Ensure the existing video conferencing system in use safeguards fair trial rights, security and privacy concerns and the dignity of the courts.

2.3.4 Technical equipment

Without stable internet connections, adequate technical equipment and software that is both stable, user-friendly and secure, remote hearings cannot meet their full potential, and judges and parties will not be confident to use them.[39] Courtrooms must be equipped with the necessary technology like screens, microphones, and cameras. This equipment should, where possible, be integrated in the established courtroom working arrangements and infrastructure.[40] Various aspects of image, lighting, sound and positioning can affect how a person is perceived and assessed in remote hearings.[41] For example, camera placement may affect the perception of a person's authority. Guidelines on, for example, placement of cameras and screens, image and background, recordings and presentation of documents etc. can be found in the booklet *Guide on Videoconferencing in cross-border proceedings* published by Council of Europe as part of the European e-justice project.[42]

A solution for court-users missing stable internet access, technical equipment and/or knowledge to participate in remote hearings from home should be available, for example by establishing physical locations where the necessary equipment is available, e.g., town halls, police stations, or courts. Further, both parties and courts need access to adequate technical support. It is recommended for participants to test the equipment and the videoconferencing system before the hearing, and guidelines for connecting to and using the video conferencing system should be produced and distributed to the participants in advance.

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[36] ECHR art. 6.
[37] Sanders (2020) p. 14-15.
[38] CoE (2013) p. 17; Stautland (2021) p. 623-625.
[39] Sanders (2020) p. 17-19.
[40] CoE (2013) p. 20.
[41] Stautland (2021) p. 619.
[42] Council of the European Union (2013) p. 18-22. *[Need to doublecheck relevance of all recommendations]*

Those involved in video-based proceedings must be aware that, even with advanced technology, there are slight delays in the transmission of audio and picture, which affects the communication.[43] This can cause interruptions and participants speaking on top of each other, which can negatively affect contradiction and the information of the case. A procedure that stipulates how parties can interrupt each other and object to a question should be explained in advance.[44] An overview picture displaying all the participants, as mentioned above, can also make it easier to communicate actively during the hearing.

> **Recommendation 8:** Equip courtrooms with the necessary video conferencing equipment, establish a solution for participants lacking the necessary video conferencing equipment. Guidelines for participating in remote hearings should be produced, and adequate technical support must be available.

2.4. Digital evidence

Digitalisation has implications for many areas of society, and the justice system and legal sector are no exceptions. The transition from typewriter and handwritten papers to computers, tablets, and phones with a myriad of features also changes what evidence the parties want access to and want to present before the court. The increased use of ICT in daily life has already influenced the choice and use of evidence and even if documents are presented in paper format, they will usually have a digital origin. Most court proceedings in the western world today are supported by digital evidence and this global phenomenon affects the court proceedings from the inside.

The change of evidence format has implications both for interpretation of the rules on evidence and for issues related to the handling of evidence. First, digital evidence is characterized by the fact that metadata is linked to the digitally stored material. This metadata may contain information that may constitute evidence in a case. Second, digitally stored information allows for automated searches in the material. It opens opportunities to secure an enormous number of files and then carry out automatic searches instead of reviewing the files manually. This can also be linked with a future machine learning-based e-Discovery system (see section 3.2 below). Analogue material has no such search function, and unless the cassette or tape is marked with content information, one must listen or look at the information, minute by minute. The same goes for printed text. Third, digitally stored information is far easier to change than analogue information. Analogue material can also be changed, but this requires special knowledge, and still the change can often be discovered. Manipulated photos are an example. Fourth, digitally stored material is easy to copy. Analogue information can also be copied, but the copy will rarely be as good as the original, and one often has an overview of how many copies exist. Digital copies are identical to the original, and copies are easy to make. This is especially a problem when digitally stored information goes astray: it is impossible to ensure that all copies of the information are returned. Fifth, digitally stored information is, in principle, easier to delete. However, pressing the delete button does not mean that the information has been deleted. Initially, only the files are removed from the "table of contents" in the computer's list of files through "deindexing", and it is not overwritten until the computer needs the storage capacity. This means that with expert assistance it is often possible to find deleted information.

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[43] Stautland (2021) p. 616; Johnson (2020); Rigby (2020); Whipple (2020).
[44] CoE (2013) p. 15.

To delete analogue information, it must be overwritten so that it is covered by other information. This is time consuming. The alternative is to delete the information by destroying the storage device itself; or examine the possibilities offered by secure storage through blockchain (see section 4).

While physical objects are clearly defined and delimited, digitally stored information is a dynamic variable in constant change that is often kept together with a wealth of other information without relevance to the case. These features complicate the question of accessing, proving, and assessing evidence, both practically and legally.

Different legal systems have reacted in diverse ways to the challenge that digital evidence represent.[45] In Norway, Denmark, and Sweden digital evidence is considered physical evidence equal to physical objects (and as opposed to testimonies), and the rule on physical evidence applies to both digital and analogue evidence. However, the distinctive characteristics of the digital evidence described above gives the court interpretational challenges. English law has chosen a different path and established specific rules concerning digital evidence several years ago.[46] The project team learned through interviews with the Croatian Ministry of Justice and Public Administration that Croatia will reform their civil procedure during 2022. The team recommends a forward-leaned reform on this point to ensure usability on all forms of evidence.

> **Recommendation 9:** Survey the rules on evidence and make sure that the rules are adaptable to digital evidence.

2.5 The interaction between digitalisation and procedural litigation

Digital technology is a valuable tool when aiming to move the court proceedings into more efficient solutions. However, one does not reach the goal solely by digitising or even engaging in broader digitalisation. Without a well-functioning set of rules and a legal culture that give the court incentives to process cases quickly and efficiently, digitizing and digitalising the case proceedings has limited effect. Whether the court has an appropriate and effective conduct of cases thus depends on many factors. However, the strategic introduction of new technologies in combination with law reform could have a transformative effect on the effective and efficient processing of cases.

Based on interviews during the Zagreb visit, the project team understands that the Croatian court has large arrears. Each judge is responsible for hundreds of cases and the proceedings in first instance takes approximately 40-50 months (3.5-4.5 years). The cases are not processed one by one, but instead are subject to several short oral hearings over a longer period of time. In every hearing, the essence of the evidence is written down in the court record, and when the judge finally decides in the case, it will only be based on the court records. This practice of multiple hearings combined with limited transcripts does not appear to be effective or fair. Oral hearings are resource-intensive, and an important reason for using this procedure is the consideration of the immediacy of evidence. When the distance in time between the oral hearing and the decision making is so long that the judge does not remember the hearing itself, but bases the judgment solely on the court records, oral court hearings are not an appropriate

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[45] Mason (2017) p. 18.

[46] Practice Direction 31B - Disclosure of Electronic Documents, supplements the English Civil Procedure Rules Part 31, cf. https://www.justice.gov.uk/courts/procedure-rules/civil/rules/part31/pd_part31b

use of resources. A judge that the project team interviewed informed that there is currently a consideration as to whether small claims should be based on a purely written procedure. One may ask how big the difference actually is though, given that the judge will base the judgment on written documents.

Another effect of processing a case over a long time is the time spent for the judge to get acquainted with the matter in advance of every hearing. Dealing with the whole case in *one* hearing and then immediately writing the judgment (in other words, an integrated approach) is far more effective than constantly returning to the case. A change in this scheme requires clear regulation from above, preferably in form of legislation. Moreover, digital solutions could facilitate the introduction of integrated cases, whereby the e-Case system and booking systems could have a *default* for a single hearing and that witnesses and advocates who cannot physically attend on proposed dates are given options of *remote* participation.

> **Recommendation 10**: Full effect of digitising the court proceedings requires clear rules on case management which could be accompanied by digital solutions that facilitate the integrated hearing of cases.

3. Dispute Resolution and Artificial Intelligence

3.1 Introduction

The ambition to computerise legal reasoning and determinations, including dispute resolution by courts, emerged first in the 1970s.[47] Initial applications in the 1980s and 1990s were based on rule-based programming but were rarely scaled-up due to the complexity of legal sources and reasoning as well as lack of digitised systems.[48] With the arrival of machine learning and text analytics in the 2000s, efforts to integrate artificial intelligence have been revived. Big (legal) data could be classified quickly and used to predict (more quickly and accurately) the correct procedural steps and even outcomes in concrete legal cases. Moreover, rule-based programming has been boosted by increased financing and digitisation and integration with machine learning operations.

What is artificial intelligence? It is a multivalent term and can be defined in various ways. While often used synonymously today with machine learning it refers fundamentally to attempts to "perform tasks that normally require human intelligence" – and thus can include traditional rule-based programming.[49] Three important distinctions though need to be made in the present context.

First, artificial intelligence varies in its degree of ***sophistication and scope***. It may be *specific* (focused on one narrow task) or *general* (a technology with consciousness, sentience, and mind, able to do multiple tasks). Almost all developments within legal technology, including for courts, are the former – specific artificial intelligence.

Second, the degree of ***human control*** in artificial intelligence applications varies from:

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[47] See D'Amato (1976); as well as Ashely (2017) for an overview.
[48] Ashley (2017).
[49] Sourdin (2019: 1116).

- '*in the loop*' (where a human decides to accept or act on a machine-based recommendation); to
- '*on the loop*' (where a machine-based decision can be stopped by human intervention); and
- '*out of the loop*' (where humans cannot override a machine-based decision).

Almost all current and emergent forms of legal technology are at the weaker end of the spectrum – i.e., 'in the loop'. Artificial intelligence-based applications are largely supportive for judges, lawyers, citizens, and court officials. The focus is on providing recommendations or information sources; rarely is there actual machine-based decision-making.

Third, it is important to identify the relevant ***temporal domain*** when discussing uses of artificial intelligence and courts. New developments in practice may be:

- *actual uses* of artificial intelligence in courts (i.e., piloted or implemented in courts);
- *analogous uses* (broader developments in legal/general technology and public sector innovation could be applied to the court sector); and
- *activation uses* (new legal technologies used outside courts may prompt/enable future artificial intelligence in dispute resolution).

This distinction is important as most reviews of artificial intelligence and courts are indirect, i.e., a reference to analogous/activation uses of artificial intelligence which could transform courts. In relation to actual uses, there is significant 'hype' about robojudging and unsubstantiated references to automated judging in various countries – although there are some concrete actual uses in some courts.

To be sure, there are many critics of the turn to artificial intelligence in dispute resolution. Implementing such systems raises several questions regarding regulation, ethics, and technology, and requires always in-depth and contextual analysis. The concerns with the above technologies concern the (1) security and privacy of data; (2) accuracy of predictions; (3) ability of all forms of artificial intelligence to handle both judicial discretion and textual semantics; and (4) lack of transparency and explainability of decision-making.[50] These concerns have been also raised by courts, for example, in the increased use of artificial intelligence in the public sector. Thus, it is also a normative or political question as to the extent to which court proceedings should be automated, whether *on* or *out of the loop*.[51]

These concerns also led the European Commission for the Efficiency of Justice (CEPEJ) of the Council of Europe to adopt the *European Ethical Charter on the use of Artificial Intelligence in Judicial Systems and their Environment.*[52] It contains the following five core principles to be respected in the field of AI and justice:

1. Respect for fundamental rights: ensuring that the design and implementation of artificial intelligence tools and services are compatible with fundamental rights;
2. Non-discrimination: specifically preventing the development or intensification of any discrimination between individuals or groups of individuals;

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[50] Sourdin (2018: 1126-1130).
[51] Re and Solow-Niederman (2019).
[52] See https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c

3. Quality and security: with regard to the processing of judicial decisions and data, using certified sources and intangible data with models conceived in a multi-disciplinary manner, in a secure technological environment;
4. Transparency, impartiality and fairness: making data processing methods accessible and understandable, authorising external audits;
5. "Under user control": precluding a prescriptive approach and ensuring that users are informed actors and in control of their choices.

Unsurprisingly therefore, there is great variation across states/courts as to the willingness to embrace artificial intelligence. The most likely use of artificial intelligence in the near future in European courts is in decision support systems for judges, e.g., gathering relevant information and sources of law and proposing elements of a decision for a judge. In other words, judges would retain significant control. The exception is smaller and simpler claims – in which there is likely to be a strong focus on automation, especially if the Estonian, British, and Canadian pilots prove successful.[53]

The remainder of the section discusses actual, analogous, and activation uses in three standard phases of dispute resolution: pre-trial, trial, and post-trial. For uses of machine learning in relation to legal information (e.g., automatic anonymisation of judgments), see section 5.

3.2 Pre-trial phase: Claims, conflict resolution and trial preparation

The most *actual* uses of artificial intelligence in dispute resolution occur in the pre-trial phase. Using mostly rule-based programming, attempts are made to streamline the claim/writ process, steer parties towards fewer issues or settlement, improve the efficiency of discovery process, and support active case management. In Croatia, one example of this is the development of a streamlined and fully online individual bankruptcy procedure. Some examples of different types of uses of artificial intelligence in the pre-trial phase are given below:

Figure 1. British Columbia's Civil Resolution Tribunal (CRT)

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[53] See discussion below in sections 3.2 and 3.3.
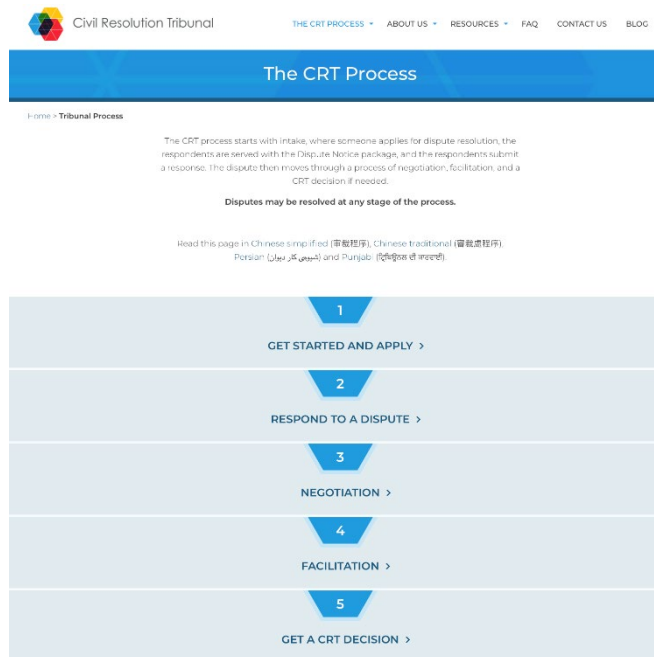
In British Columbia, the Civil Resolution Tribunal (CRT) is an independent, quasi-judicial tribunal.[54] It is Canada's first *online tribunal*. It provides currently 'end-to-end dispute resolution services for strata property disputes of any amount, small claims up to $5,000, certain motor vehicle personal injury disputes including accident benefit disputes, and disputes involving incorporated societies and cooperative associations.'[55] The CRT model is based on a 'collaborative, problem-solving approach'. ICT is mobilised to provide 'timely access to legal information, self-help tools, and dispute resolution services to help resolve disputes collaboratively as early as possible'. See Figure 1 above and the following website for commencing and defending claims: https://civilresolutionbc.ca/tribunal-process/. If parties are unable to resolve their dispute, a CRT tribunal member makes a 'binding decision, enforceable as a court order'. See screenshot of process below.

Another example of a state-backed online dispute resolution process is the European Online Dispute Resolution (ODR) platform, established by the European Commission to "make online shopping safer and fairer through access to quality dispute resolution tools". All online retailers and traders the region are obliged to provide a link to the platform, together with the trader's address: see https://ec.europa.eu/consumers/odr/main/?event=main.trader.register and the screenshot below of the form in Figure 2.

Figure 2. EU European Online Dispute Resolution (ODR) platform

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[54] Operating under the authority of the *Civil Resolution Tribunal Act (CRTA)*
[55] CRT (2021: 1).

Online Dispute Resolution

① Trader details   ② Describe your complaint   ③ Personal information

You can search our records using the trader's name or website. If we have the trader's details, they will be filled out automatically in the form below.

If not, you can **give us the trader's details.**

What is the trader's name? *	Trader name
What is the trader's email address? *	Email address
What is the trader's website? *	Website
Which country is the trader based in? *	Select a country
What is the trader's address?	**Street**
	Street
	Postcode **City**
	Postcode City

Reset   Save as draft   Go to next step

Give us some details about the trader

Please enter as much information as possible on the trader you bought the good or service from. We need this to match your complaint with the company you're complaining about.

Do you need help?

The national contact point in your country can guide you through the process.

Help

Assistance services survey

Given the low levels of legitimacy of the court system in Croatia and the length of proceedings, development of an online dispute resolution system for small and smaller cases may be one productive way forward, at least for disputing parties that wish to use such a system.

Some developments projects seek to accelerate and focus pre-trial preparations with machine learning, with the earliest and most notable example being artificial intelligence-based E-discovery. Discovery refers to pre-trial discovery, by which each party can request and receive evidence from the opposing parties. Given the explosion of digital evidence (evidence is often big data) and the rise in asymmetric discovery (where larger parties had significant discovery obligations due to the volume of digital documentation), US courts began already in 2012 permitting the use of machine learning for parties to discover their relevant documents for a case.[56] In *Da Silva Moore et al. v. Publicis Groupe & MSL Group*, Judge Peck stated:

> While some lawyers still consider manual review to be the 'gold standard', that is a myth, as statistics clearly show that computerized searches are at least as accurate, if not more so, than manual review… While this Court recognizes that computer-assisted review is not perfect, the Federal Rules of Civil Procedure do not require perfection.[57]

The process involves manually tagging relevant documents for a training set in a sample of possibly relevant documents (e.g., 5–10%), developing an algorithm, testing the algorithm on a test set (e.g., 5–10% of documents), having the algorithm approved by the judge, and running the algorithm on the remainder of the documents to produce a final list of relevant documents for discovery.[58] This approach has been exported to other countries and various software packages have been developed (e.g., Lumis, VenioOne); and various law firms use machine

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[56] Scholtes and Van der Herik (2021).

[57] 287 F.R.D. 182 (S.D.N.Y. 2012). Cited in Scholtes and Van der Herik (2021), 262.

[58] Ashley (2017).

learning-based software for discovery processes. As to which model is best, there is disagreement in the field. Scholtes and Van der Herik sum up the existing consensus:

> Initial approaches used k-nearest neighbor (k-NN), linear regression, naïve Bayes, latent semantic indexing (LSI), and probabilistic latent semantic analysis (PLSA) (see Manning, 2009 and Sebastiani, 2002). All of these algorithms had some kind of limitations when used for e-discovery. K-NN is too sensitive to training errors. Linear regression is sensitive to class imbalance, so it requires that the number of relevant and non-relevant documents in the data set are almost equal. Naïve Bayes requires a great deal of pre-processing. Finally, LSI and PLSA suffer from all of the drawbacks mentioned above with the additional disadvantage that they do not scale well. Quite quickly, support vector machines (SVMs) became the de facto standard in TAR: an SVM offers the best combination of speed and quality. As a multitude of research shows, SVMs outperform the other text-classification algorithms mentioned above by 10–20%. Even when confronted with faulty training documents, the SVM corrects itself after it has reviewed a certain number of documents.[59]

Some projects are piloting the possibility to improve trial preparation through use of machine learning on court data, not just party-based documents. The SAKULATOR project in Norway seeks to address the problem of increasing violations of legislative requirements for case length by the Norwegian courts.[60] The new digital tool being developed seeks to help judges better estimate processing time. Initial regression analysis and machine learning has identified the important factors that determine case time[61] and initial design work is underway for an app that will assist judges in estimating the processing time, especially when complex cases come up before the courts – something that is happening more and more frequently. The project also seeks through knowledge and innovation to strengthen legal certainty and the legitimacy of the courts; facilitate better active case management and to provide a better basis for resource allocation in and among the courts. In order to be sustainable, the app will aim to include recurrent machine learning so the algorithm can adapt to changing patterns in the case processing time factors.

It also important to explore the connections between the ongoing digitalisation of court proceedings and the possibilities of artificial intelligence. Krokan notes in relation to China that

> I have looked at examples from China, such as automatically recording audio and video in court cases, streaming lawsuits to the public, allowing users to submit parts of the case in writing, allowing artificial intelligence to propose judgments (but not judging) and creating written, searchable data of everything that is said in court.[62]

While it is difficult to verify all developments in China, it is clear that their comprehensive digitalisation is generating new possibilities (but also risks – see further below).

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[59] Scholtes and van den Herik (2021), 262-3. See also Yang et. al. (2017).
[60] See: https://juristen.no/nyheter/2020/05/digitalt-verkt%C3%B8y-skal-ansl%C3%A5-saks%C2%ADbehandlings%C2%ADtid-i-domstolene
[61] Insert references.
[62] Krokan (2021).

Moreover, the Norwegian Court Commission (*Domstolkommisjonen*) was appointed to analyse, among other thing, how Norwegian courts can work more efficiently.[63] The Commission gave its second official report in 2020 where it pointed to several areas where use of artificial intelligence might be relevant in Norwegian courts. One area was early identification of cases that might be settled.[64] Many cases never even reach court proceedings, due to settlement or withdrawal. There is reason to believe that these cases have several similarities, which could be uncovered through data analysis and used in planning of court cases; and conducting such analysis is part of planned SAKULATOR 2.0 phase (see above). Artificial intelligence can be used in this way to maximize the use of court rooms, by planning more cases than the capacity allows because of the probability of settlements and withdrawals.

Turning to *analogous uses*, many courts are examining the possibility of using computational methods to gather and prepare documents and evidence for consideration. This approach has been adopted in the Directorate of Immigration that has developed and implemented a system – Ada – that automates the collection of documents for the processing of citizenship applications.[65] The applications 'Ada' and 'Kalle' perform tasks around the clock and undertake up to fifty different work processes: they "register uploaded documents, filter and mark applications and send out confirmations of legal residence" and in 2020 "decisions on citizenship". By the end of 2020, Ada and Kalle had performed over 105,000 tasks.

Finally, broader developments in legal technology research could *activate* new uses of artificial intelligence in the pre-trial phase dispute resolution. Some of the most notable research concern the prediction of different features and outcomes of cases based on the facts of the cases. This has included judgment outcomes (including in the USA, Germany, Brazil, Philippines and European Court of Human Rights),[66] judicial positions,[67] judicial authorship,[68] which lawyers are likely to win cases,[69] and relevant cases and areas of law,[70] influence of public opinion[71] – with the majority of studies using natural language processing. The area that can be most utilised for practice is research on area of law prediction (which could facilitate case allocation and preparation) and judgment outcome (which could be used to influence broader court decision-making over negotiation). However, the latter would be rather controversial if done at an individual case level and raise issues around equal treatment.

Moreover, the growing use of chatbots in the public sector could also help improve judicial sector services to the public, including claims processes and dispute resolution. For example, Slotten and Schartum mapped 21 chatbots in the public and private sectors in Norway that met the definition of 'self-help legal aid'.[72] Most of the chatbots were based on platform solutions

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[63] NOU 2020: 11 p. 22.

[64] Ibid.

[65] UDI (2020).

[66] Katz et al. (2014; 2017); Ashley (2019); Chalkidis, Androutsopoulos, and Aletras (2019); Quemy (2019); Kaur and Bozic (2019); Kowsrihawat et. al (2018); Lage-Freitas et. al. (2019); Medvedeva, Vols, and Wieling (2020); O'Sullivan, C. and Beel, J. (2019); Virtucio, M. et. al. (2019); Waltl et. al. (2017); and Zhong et. al., (2019).

[67] Ashley (2019).

[68] Langford, Behn & Lie (2020).

[69] (e.g., Surdenau, 2011),

[70] Sulea et al (2017), Howe, Khang and Chai (2019), Quemy (2019).

[71] (Sternberg, 2019),

[72] Slotten and Schartum (2021).

from Boost.ai and Kindly, and all were text-based and had the same user interface. The latter was considered positive as it provided recognition and set common expectations about the service, although quality of the legal service could clearly vary. User input will often result in the presentation of different selection options in order to narrow down the problem area and legal field, although they continue to develop in scope. The chatbot Frida in the Social Security Agency (NAV) originally had questions about parental benefits as a starting point but was later developed to cover general questions that covered most benefits. The growing development of chatbots in the public sector could include the justice sector, and thereby support the Croatian justice ministry's focus on citizens and e-Services. For example, the justice ministry in various countries provide electronic websites on how to respond to identity and digital theft, a growing problem in all countries.

Recommendation 11: The Ministry of Justice and Public Administration could pilot (or seek law reform) to permit fully online court procedures for smaller claims, mobilise court case data and/or design applications to develop tailor-made and bespoke digital processes for speedier case processing, and develop a self-service legal aid in one area to help citizens.

3.3 Trial phase: Decision-Making on Liability/Guilt/Recidivism

The actual use of automated decision-making in courts is so far very limited and is primarily focused on judicial support. It has occurred most notably in areas in the USA where law and caselaw was increasingly subject to a 'codification' process, for example development of detailed guidelines in sentencing in criminal cases in the 1980s.[73] These systems were developed and augmented with rule-based programming in the 1990s and early 2000s and then advanced further with machine learning in the 2010s.[74] The predominant focus has been on assessing risks of recidivism for decisions on bail and probation, but the tools have also been applied in some US states in the sentencing phase - where recidivism is a factor.[75] Završnik sums up the current trends:

> In general, courts use such systems to assess the likelihood of the recidivism or flight of those awaiting trial or offenders in bail and parole procedures. For instance, the well-known Arnold Foundation algorithm, which is being rolled out in 21 jurisdictions in the USA (Dewan, 2015), uses 1.5 million criminal cases to predict defendants' behaviour in the pre-trial phase. Similarly, Florida uses machine learning algorithms to set bail amounts (Eckhouse, 2017). These systems are also used to ascertain the criminogenic needs of offenders, which could be changed through treatment, and to monitor interventions in sentencing procedures (Kehl and Kessler, 2017). Some scholars are even discussing the possibility of using AI to address the solitary confinement crisis in the USA by employing smart assistants, similar to Amazon's Alexa, as a form of 'confinement companion' for prisoners. Although at least some of the proposed uses seem outrageous and directly dangerous, such as inferring criminality from face images, the successes of other cases in the criminal justice system seem harder to dispute or debunk. For instance, in a study of 1.36 million pre-trial detention cases, scholars showed

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[73] Sourdin (2019).
[74] Donohue (2019).
[75] Kehl and Kessler (2017).

that a computer could predict whether a suspect would flee or re-offend better than a human judge (Kleinberg et al., 2017).[76]

However, the determination of liability or guilt in standard court proceedings is so far rare if not non-existent. The potential is clearly there in some types of cases – where rules or existing caselaw is clear and simple; or there is significant volume of data and little discretion is needed in handling unanticipated developments. The increase in digitised texts presents enormous opportunities - as computational text analysis and machine learning - for extracting relevant patterns; and thus *activate* uses of artificial intelligence in the trial phase.[72] Likewise, research on prediction of judgments – in which machine-learning models can predict outcomes with 6-90% accuracy or outperform human lawyer predictions - shows the potential to gradually develop accurate algorithms.[77]

However, judicial decision-making is yet to be automated in any country although significant inspiration is being taken from developments in the public sector. It is thus *analogous uses* that dominate. The approaches from the broader public sector could be applied to at least smaller civil claims in courts or proceedings that have less or no focus on fault. Two examples can be given.

First, in New Zealand, the state-run Accident Compensation Corporation (ACC) uses an algorithm to make decisions in its no-faults insurance claims process for motor vehicle accidents. Walshspoke from the consultancy company that helped build the application commented that the "ACC used to manually process more than two million claims every year, which required 60 staff", but "90 per cent of ACC claims" were straightforward.[78] They worked with the organisation to develop predictive models for these claims and the new algorithm went into use in in September 2018. The algorithm uses 'data from 12 million anonymised claims lodged between 2010 and 2016 to determine the probability that a given claim would be accepted'; but the 'remaining 10 per cent of claims are more complex, such as sensitive claims, where staff members with expertise need to deal with them.' However, the decision-making process is in the loop for negative decisions: "Any decision to deny cover will always be reviewed and dealt with by a staff member."

Second, in Norway, the Directorate of Immigration (UDI) have implemented a system that automates processing of citizenship applications, after a pilot with family reunification applications for applicants with expert/trade qualifications.[79] A rule-based programming system (developed with Compas) gathers information through integration with other public information systems and uses this to approve or decline applications. In 2020, the UDI started automated processing of citizenship cases in 2020, cutting drastically waiting times.

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[76] Završnik (2021), 625.

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[78] See: https://www.hinz.org.nz/news/435335/Algorithm-automates-ACCs-claims-process.htm

[79] Compas (2021), UDI (2020). Another relevant example of the use of AI in the public sector is found in the Norwegian State Educational Loan Fund (Lånekassen), who allocates loans and grants to students. Lånekassen has used automated decision-making systems for processing applications for a long time and has recently tested out more sophisticated systems. Student loans are as a main rule granted to students living away from their parents. Not all students are required to document their residence to receive loans and grants, but the loan fund uses sampling in order to ensure compliance. Lånekassen tested using artificial intelligence to pick students to the residence control, which resulted in disclosure of twice as many frauds than in the reference group. The result was a reduced number of payments to students not entitled to loans and grants. See NTB (2019).

Applications that satisfy clear conditions are subject to full automation; while those raise complex considerations (e.g., from children) are subject to semi-automation. Here, a case officer in the UDI must go into the case processing tool to assess the conditions that require manual assessment. As at August 2020, and after some teething problems, approximately 70 per cent of the applications from Nordic citizens have been fully automated; and as at October 2020, approximately 10 percent of all citizenship cases has been fully automated. In these cases, as soon as the file was forwarded from the police to the UDI, the application was approved. In addition, there are time savings in cases that have been partially automated. The UDI has a goal of a full automation of 30 percent of all citizenship cases by 2021.

Recommendation 12: Consider piloting automated decision-making in simple or small claims.

3.4 Post-Trial: Sentencing and Damages Determination

Finally, technology may be useful at the post-trial phase in the determination of criminal punishment and civil damages. As noted in section 3.3, this field has been subject to a growing codification over time. The concern that judges are not consistent or correct in their methodology for choosing the form and length of punishment or calculation of damages has led to a growing use or call for guidelines.[80] At the same time, there is deep concern that the growing use of recidivism prediction software like Compas and the Level of Service Inventory – Revised (LSI-R) system for sentencing prediction may remove too much discretion from judges and incorporate some machine biases even if reduces human biases. [81] However, some scholars promote a middle way of cognitive computing - support to courts - in which the role of applications is to help judges locate and understand punishments and compensation in similar previous cases rather than having a central role in actual determination.[82]

The potential to help judges in complex post-trial areas is underscored by new research on predicting fines by data protection authorities of the GDPR. Using data on fines from all EU data protection authorities, Ruohonen and Hjerppe found that 'basic meta-data (i.e., articles referenced, year of enforcement, country or origin, and industry sector) seems to provide slightly better predictive performance compared to basic text mining features (i.e., TF and TF-IDF) extracted from the decision documents.'[83] However, they found that 'even the text mining features seem sufficient for blind black-box predictions'.[84] Thus, consideration should be given to areas where data can be collected on punishments, damages and broader remedies so that courts could obtain more insight on at least previous practice.

Recommendation 13: Consider piloting presentation/prediction of sentencing/remedies for a discrete area of law.

3.5 Broader reflections on automated decision-making for trial and post-trial phases

At the same time, much can be learned from the broader public sector about the risks of implementation of artificial intelligence. For example, the Dutch childcare benefits scandal (which led to the resignation of the entire Dutch cabinet) was a social security scandal in the

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[80] See, e.g., discussion in Donohue (2019) and Bonnitcha et. al. (2021).
[81] Donohue (2019); Kehl and Kessler (2018), 11.
[82] Donohue (2019), Sourdin (2018).
[83] Ruohonen and Hjerppe (2020), section 6.
[84] Ruohonen and Hjerppe (2020), section 6.

Netherlands where algorithmic bias resulted in wrongful accusations of fraudulent benefit claims from Dutch citizens.[85] The automated system targeted beneficiaries according to factors that made them supposedly more likely to commit fraud. However, this resulted in thousands of wrongful repayment claims, and those with a bicultural origin and residents in low-income neighbourhoods were most negatively affected due to bias and an out-of-the-loop system of automation.[86]

Another example is Robodebt, an Australian automated system introduced to prevent welfare payment fraud. Introduced in 2016, the system was triggered when it found inconsistency between the income reported by a welfare beneficiary and the income reported by its employer. Manual investigations in cases of incoherence were stopped, and the system simply sent debt collection letters to beneficiaries. The number of average interventions (usually a debt collection letter) rose from 20 000 per year to 20 000 interventions *per week*.[87] However, the system wrongfully accused beneficiaries of fraud due to new calculation methods and errors. The lessons that can be learnt from this implementation of an automated system have been identified as need for (1) communication with and support to users, (2) transparency, (3) external perspectives, and (4) guidance and oversight.[88] The lack of communication consisted in poor initial information to users about the new service, as well as inaccessible user support. Transparency issues arose due to a fully automated system without human intervention, combined with little communication and publicity on the system's function and algorithmic reasoning. The absence of external perspectives consisted in lack of user testing and more general involvement of external stakeholders in design, testing, and implementation of the system. Last, the lack of guidance and oversight was characterized by few external advisory organs, whether in planning or implementation.

Finally, we have also seen more intrusive uses of artificial intelligence to discipline citizens. In 2014, China launched its plan for a comprehensive Social Credit System (SCS), described as 'a system of rewards and punishments for sincere and untrustworthy conduct'.[89] The 2014 plan describes a scoring system to be used for a wide range of purposes, including contract enforcement, environmental protection, and food safety.[90] The system is planned to gather data from both public and private sources to automatically provide scores for citizens, and sanction illegal and immoral behaviour. SCS is not a unique system, but rather inspired by credit scoring systems broadly used by financial institutions in the United States.[91] However, a substantial distinction is the scope of the system, both regarding range and sanctions applied. SCS is planned to be used in many different areas, not just the financial sector, and the sanctions could be more far-reaching than inability to open credit cards or renting apartments. The system is already used within public transportation, where unacceptable conduct might lead to being banned from travelling by train or plane for up to a year.[92] Systems akin to SCS are likely not

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[85] Amaro (2021). The scandal had its background in Dutch authorities' approach to hinder benefit fraud, after an increase in reported cases. Schnabl (2021).

[86] Levie (2021); Geiger (2021); Vervloesem (2020).

[87] Macleod (2017).

[88] Ibid., pp. 61–67.

[89] Creemers (2018).

[90] Chorzempa (2018).

[91] Ibid.

[92] Wang (2018).

to be seen in European countries, however, SCS illustrates how fundamental human rights can be diluted by artificial intelligent systems.

4. Blockchain in the Justice Sector

4.1 Introduction

Blockchain is a distributed ledger technology that securely stores data by using cryptography. Blockchains consist of chains with data blocks that are extended with new blocks when new transactions are made, which gives a complete ledger of every transaction history. Every new block includes the unique hash value of the previous block, and the majority of nodes in the network must approve the validity of transactions and the validity of the block in order to add a new block to the chain. This gives a verified ledger of transactions, where fraud is impossible because the hash value is secured by the chain.[93]

4.2 Land registration

Blockchain is often associated with digital cryptocurrencies like Bitcoin. Yet, use of the technology is not limited to digital cryptocurrencies, and it can be used on several other areas, including within public administration. A feasible use of blockchain is to secure information and transactions in land registries. The main advantages of using blockchain in such registries are more secure systems less vulnerable to attacks or fraud, and easier record maintenance.[94] Blockchain based land registries do not require physical records, and thus involve less administration. They also serve as independent registries, as the data in the blocks keeping track of transactions can't be subsequently revised, not even by government officials, which might increase citizens' trust in and thus use of the system.

Blockchain in land registration is being tested in a number of countries.[95] Estonia is one of the countries furthest ahead in use of blockchain on a national level, with use of the technology in several public registers. Both their official law and regulation platform (National Gazette), digital court file system (e-File), land register, and business register are blockchain based.[96] This ensures notoriety of the data in the registers and reduces the risk of tampering with information recorded. It is said that this "allows Estonian citizens to see exactly who has accessed that data and challenge any suspicious behaviour

4.3 Courts and litigation

Blockchain technologies have also been used for smart contracts. These are applications where the transactions following from a contract are automated when the set terms are met, usually that the other contract party fulfils its obligations.[97] This secures an objective third party that can ensure that transactions are effectuated at the desired time, while the use of blockchain secures that the trigger terms of the contract cannot be changed.

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[93] Nofer (2017).
[94] Krishnapriya (2020).
[95] Kaczorowska (2019).
[96] Sihvart (2017).
[97] Christidis (2016).

Several private companies offer smart contract solutions, yet, in China such a system is supposedly offered by the courts.[98] It is possible that offering a public smart contract system can reduce court cases because of the secure and automatic fulfilment of contracts. Further, such systems might simplify filing court cases where the public system has been used, as the system has already stored the contract information and thus much of the needed evidence.

4.4 Croatian context

As shown, blockchain can be used in several public systems to increase security and credibility. In a Croatian context, blockchain could be used, inter alia, in land registration and to secure digital evidence in the e-Case system. However, implementation of blockchain systems requires further examination. The system should seek to fulfil a clearly defined goal, e.g., improved security or reliability, and issues regarding, energy consumption, interoperability, privacy protection, etc., should be considered.[99] Hence, we do not recommend any specific blockchain systems without further investigation and examination.

> **Recommendation 14:** Further examine the possibilities of blockchain systems in the justice sector.

5. Legal Information and Anonymisation of Court Decisions

5.1 Introduction

To facilitate innovation within the legal sector in a state, access to primary legal sources is central. By primary legal sources, we mean legislation, regulations, and decisions of courts. These sources should not just be available and easily accessible to the general public on the Internet, but also be easily accessible to any programmer, which is a claim supported by Blume et al.[100]

5.2 Enabling Innovation with Caselaw

In Croatian context, caselaw data (metadata of the cases and the text of the court decisions) is available in machine-readable format. The texts of the court decisions are available from or displayed at SupraNova and Portal sudske prakse. The metadata of the cases are available from or displayed at SupraNova, Portal sudske prakse, E-case and E-Notice Board. However, this way of publishing does not necessarily meet the publishing guidelines developed by the Harvard Law School's Caselaw Access Project.

The Caselaw Access Project is firstly a collection of millions of court decisions rendered in the United States. The project resulted in structured, case-level data broken down by majority and dissenting opinion, with human-checked metadata for party names, docket number, citation, and date.[101] The data was created by digitising millions of pages of court decisions contained in ten thousand bound volumes. The project has also provided the Digital-First publishing guidelines.[102]

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[98] Lu (2021).

[99] Monrat (2019) pp. 117145-117148.

[100] Blume (2020).

[101] Caselaw Access Project (2018a)

[102] Caselaw Access Project (2018b)

- Through the two systems, *SupraNova* and *Poral sudske prakse*, Croatia meets many of the listed characteristics of the Digital-First guidelines. For instance, court decisions are available online on Portal sudske prakse to the general public without charging the user. As stated in the guidelines, decisions of the courts should also be accessible to any programmer via a public, documented Application Programming Interface (API). Moreover: The API should consist of structured case-level data with associated metadata and the text of the Croatian court decision. This data is available in machine-readable formats for developers of such an API, as stated above.
- The API should be developer friendly. The API should, inter alia, be well documented. The interface should allow for easy manoeuvring and have appropriate font size. Two examples of documentation sites are Spotify's API's documentation, which is found at: https://developer.spotify.com/documentation/web-api/, and the Caselaw Access Project's API's documentation, which is found at: https://case.law/docs/. The latter has the most appropriate font size of the two examples.
- The API should be listed on the Croatian 'data.gov.hr' site or the 'test-data.gov.hr' site, which should also enable the API to be listed on the open data catalogue of the European Union at https://data.europa.eu/.

An example of a compliant approach is Quemy's organisation of the caselaw of the European Court of Human Rights, which provides an API and ability to download the data in JSON-format, resulted from the European Court of Human Rights OpenData (ECHR-OD) project.[103] The data consists of structured case-level data of decisions from the European Court of Human Rights (ECtHR).

To enable a data service, where the data consist of decisions of the Croatian courts, the data should be downloadable in addition to be being available via an API. The option of downloading the data is suited where the data are used in machine learning.

A creation of an API and downloadable JSON-formatted files containing decisions of the courts would, inter alia, enable:

- Research on court decisions, such as patterns in facts and the case outcome;
- Development of algorithms for tracking citations to legal sources within the text of the court decisions, which then could be applied for allowing the user to manoeuvre to a cited legal source;
- Research and potential development of search systems, which allow the user to search by entering facts of their situation/case;
- Students from different disciplines, including law students, to receive teaching in programming where real Croatian court decisions are used as data to work with;
- Research using the created dataset and European Court of Human Rights data, which could provide insight on Croatian national court decisions in relation to caselaw from the Court.

To achieve these aims the API and JSON-formatted files should be as accessible as possible, and, therefore, access to the API and the JSON-files must be free of charge.

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[103] See European Court of Human Rights OpenData Project at Quemy (2019).

Recommendation 15: Decisions of the courts should be accessible to any programmer via a public, documented Application Programming Interface (API) and downloadable JSON-format.

5.3 Caselaw and the Display of Search Results

According to interviews done during a study visit to Zagreb, IUS-INFO is used by Croatian judges, lawyers, and academics. IUS-INFO is a commercial database which includes Croatian court decisions. The widespread use of a commercial database might reveal a potential for improvement of *Portal sudske prakse*.

For instance, in *Portal sudske prakse* metadata is shown on one URL and the text of the court decision is shown on another. To enable easy access to information on decision of the courts to the general public, lawyers, judges and others, information on the decision of the court should be presented on the same page as the text of the court decision.

An example, from a Norwegian context, is the presentation of court decisions in the legal search engine Lovdata Pro. When displaying a court decision in Lovdata Pro, metadata about the court decision is displayed on the top of the page while the text of the court decision is shown below. The user is presented with information on the reference of the court decision, the name of the court, decision date, and so forth.

Photo: Screenshot from a judgement published in the database Lovdata Pro

The field titled 'Saksgang' contain a reference to any other court decisions in the same case. This metadata is equivalent to the metadata 'Prethodna odluka' and 'Naknadna odluka' which, like the other information mentioned in the previous paragraph, exist as metadata in xml-format. Data in, for instance e-Case, may be used as a source to more metadata, such as the name of the judges who delivered the decision.

There is also considerable potential for introducing machine learning in the generation of new search engines for case law. For example, some researchers have estimated the jurisprudential importance of ECtHR decisions[104] while a Costa Rican statistical agency has used machine learning to develop automatic case summaries for the courts.

> **Recommendation 16:** Display information on a decision of the court on the same URL as the text of the court decision.

5.4 Enabling Innovation with Legislation

As the Republic of Croatia owns Narodne novine, the state is well positioned for making all legislation accessible to any programmer via an API and downloadable in bulk in xml-format and JSON-format. In addition, the result of the CADIAL-project is, inter alia, publication of legislation in xml-format, which is found in the CADIAL search engine on Središnji katalog službenih dokumenata RH.[105]

Development of such a service would enable innovation opportunities parallel to those described in relation to court decisions, and the data service should be easily accessible to any programmer (well documented, free of charge, and listed on the open data catalogue of the European Union).

A development would also enable effective and up-to-date consolidation of legislation. Consolidation can take place on the entry into force date of an amendment or change, instead of subsequently after multiple amendments.

The public AUSTLII legislation and caselaw database in Australia has gone further. It provides a tool for lawyers and the public to computationally represent and explore legislative provisions:[106]http://austlii.community/wiki/DataLex

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[104] Chalkidis et. al. (2019).

[105] Središnji državni ured za razvoj digitalnog društva (2017).

[106] Mowbray, Greenleaf and Chung (2021).

Figure 4. DataLaw Application Development Tools

Recommendation 17: Development of an API, which makes Croatian legislation accessible, and make the legislation downloadable in bulk in xml-format and JSON-format

5.5 Legislation and the Display of Search Results

Croatian consolidated legislation is published in Narodne novine.[107] However, when we tested Narodne Novine's search engine, we did not find a prioritization of consolidated legislation in our search results. Consolidated versions of Croatian legislation can also be found openly available on the non-official website Zakon.hr. According to European Forum of Official Gazettes, there are no specific deadlines for consolidation, and consolidation of Croatian legislation in Narodne Novine takes place when legislation has been amended at least three times.[108]

Three central Scandinavian search engines (Lovdata (Norwegian legislation), Karnov (Danish legislation) and JUNO (Swedish legislation)) prioritize consolidated legislation in the search results. When searching for an act, which has been amended by succeeding act(s), the consolidated version of the act is displayed at the top of the search result list. Such a prioritization makes the current legislation easily accessible for the user of the search engine.

Recommendation 18: Prioritize consolidated legislation in the search results in Narodne novine's search engine

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[107] European Forum of Official Gazettes (n.d.)

[108] European Forum of Official Gazettes (n.d.)

5.6 Anonymisation of Court Decisions

5.6.1 Introduction

Court decisions may include personal information, which might entail a need for anonymisation of a court decision before publication. In the following, the term 'anonymisation' will be employed in a broad sense to comprise a process seeking to modify a text to prevent the disclosure of personal information, while preserving as much semantic content as possible. This definition of 'anonymisation' is inspired by the CLEANUP Project.[109]

5.6.2 On Privacy and Transparency

The General Data Protection Regulation (GDPR) applies to the processing of personal data. According to Article 4(1) of the GDPR, the term 'personal data' means any information relating to an identified or identifiable natural person. However, caselaw with personal information can be published if it can be justified under Article 6 of the GDPR, although there may be some exceptions for some types of data. The Norwegian Court Administration's working group and Ministry of Justice and Public Security in Norway have concluded that processing and publishing of personal data in case law by courts is lawful in two circumstances:

- 'processing is necessary for compliance with a legal obligation to which the controller is subject' (article 6(1)(c));
- 'processing is necessary for the performance of a task carried out in the public interest' (article 6(1)(e).[110]

For the latter, it must be found that publication of court decisions is a task carried out in the public interest within the meaning of Article 6(1)(e) of the GDPR. According to Article 6(3), the basis for the processing referred to in point (e) of paragraph 1 shall be laid down by Union law or Member State law, and the Union or the Member State law shall meet an objective of public interest and be proportionate to the legitimate aim pursued. According to Article 6(2) of the GDPR, Member States may introduce more specific provisions to achieve processing in compliance with Article 6(1)(e).

In considering necessity under sub-paragraph (c) and (e) it is important to remember that publication of court decisions not only raises privacy issues, but also raises transparency issues. It is important to avoid tunnel vision, focusing exclusively on privacy as the single objective when considering anonymisation of court decisions. Making caselaw available transparently fulfils many important objectives. One aspect of transparency is the need to take information required for legal reasoning into consideration. High levels of anonymisation can lead to loss of information essential for understanding the court decision. Commentators have been increasingly critical to the use of GDPR to introduce an anonymisation tradition from Germany and Austria that conflicts with a long tradition of openness and transparency in other European countries.[111]

It follows from Article 5(1)(a) of the GDPR, that personal data shall be processed lawfully, fairly and in a transparent manner in relation to the data subject. However, transparency in relation to the national courts' decisions is also an important consideration. It follows from

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[110] Sørensen (2020) p. 47
[111] Bobek (2019) pp. 183-189

Article 6(1) of the European Convention on Human Rights (ECHR) that judgments shall be 'pronounced publicly'. An obligation for the Member States to publish every rendered judgment non-anonymised cannot be read in Article 6 of the ECHR itself, but the need for transparency is still expressed in Article 6 of the ECHR.

Article 86 of the GDPR is a provision on processing and access to official documents, such as court decisions. According to Article 86 of the GDPR, personal data in official documents held by a public authority (such as Croatian national courts) or a public body or a private body for the performance of a task carried out in the public interest may be disclosed by the authority or body in accordance with Union or Member State law to which the public authority or body is subject in order to 'reconcile public access to official documents with the right to the protection of personal data'. The provision provides support for public access to court decisions must not be lost as a consideration in the application of the GDPR.

However, there is recognition that the necessity requirements may require that some types of personal data not be processed, especially requires special attention, especially that which falls under Article 9 (special categories). It also notable that the European Court of Justice has now required anonymisation of requests for preliminary decisions involving natural persons (which affects first instance decisions in the EU litigious proceeding).[112]

> **Recommendation 19:** Establish the basis and specific provisions for the processing of personal data in relation to publication of court decisions in national Croatian law which strike a balance between privacy and transparency

5.6.3 On the Possibilities and Limitations with Automatic Anonymisation of Court Decisions

Automatic anonymisation of court decisions presents an opportunity for efficiency. Easier and faster anonymisation presents an opportunity to ease the publication process of court decisions. Automatic anonymisation might also be viewed as representing an opportunity to publish a higher number of court decisions.

To create an anonymisation system which uses machine learning, large amounts of data consisting of manually anonymised court decisions is needed. Even with such data, the question arises as to whether it is at all possible to create a fully automatic system for anonymisation of court decisions. In a fully automatic system for anonymisation, the system will identify personal data and replace the personal data with abbreviations and the like. Example: 'On 11 January 2021, Ivan Horvat was arrested in Barcelona' *becomes* 'On 11 January 2021, A was arrested in Barcelona'.

A common challenge with using machine learning is the accuracy issue. A common way to explain accuracy in a machine learning context is to examine true versus false positives / negatives. True positives exist when personal data in a court decision is correctly identified by the system and anonymised. True negatives are the text which the system correctly does not identify as personal data.

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[112] Court of Justice of the European Union, *From 1 July 2018, requests for preliminary rulings involving natural persons will be anonymised*, Press Release No 96/2018 https://curia.europa.eu/jcms/upload/docs/application/pdf/2018-06/cp180096en.pdf See discussion in Bobek (2019).

However, even with many true positives and true negatives, the accuracy issue remains. False positives exist when the fully automatic system incorrectly identifies something in the text of the court decision as personal data and replaces it with abbreviations and the like. Example: 'the attack happened outside of Ivan Vučetić in Zagreb' *becomes* 'the attack happened outside of A in Zagreb'. In this example, the system wrongly classifies a place as a personal name and mistakenly anonymises it. Moreover, the system can miss personal data in the text of the court decision, producing false negatives.

The accuracy issue with using machine learning demonstrates that a fully automatic system for anonymisation of court decisions is problematic. A fully automatic system will entail an acceptance of the risk of text in court decisions being excessively removed (false positives) and the risk of personal data not being removed (false negatives) before publication. An argument for taking those risks would be that manual anonymisation is not infallible either.

At the same time, the solution could be to combine machine learning with human assessment, i.e., a decision support system for anonymisation of court decisions based on machine learning. The Croatian delegation saw a demonstration of a system for semiautomatic anonymisation of court decisions during their visit to the legal information provider Lovdata in Oslo. A system which combines machine learning with human assessment, as an alternative to manual anonymisation or a fully automatic system, should achieve a higher degree of accuracy and efficiency. In such a decision support system, the anonymisation models are applied in interaction with a user through an interface.

A system that does not automatically replace personal data with abbreviations and the like, but instead automatically *proposes* what is personal data in a particular court decision, will entail that the user checks if some of the proposals are not good, i.e., are not actually personal data. From the user's perspective, using such a semi-automatic system is the other way around - when manually anonymising court decisions the person finds personal data in a court decision.

Another advantage of semi-automatic anonymisation of court decisions versus fully automatic anonymisation is that it enables a room for discretion. A human may consider that the proposal goes too far as the anonymisation model proposes the removal of information which is necessary for legal reasoning.

In this respect, it is notable that the CLEANUP project in Norway has sought to develop a 'gold standard' for full anonymisation of judgments.[113] The dataset was based on a collection of 13,759 court cases from the European Court of Human Rights (ECHR). A first attempt to address this re-identification risk was to 'remove from the text all direct and indirect identifiers that may be related to the individual', which was done through 'hiring a group of 12 law students from the University of Oslo' and asking 'them to read through a collection of ECHR court cases and subsequently mark within each case all text spans that may directly or indirectly contribute to the re-identification risk'.[114] However, whether this process of stripping of direct and indirect identifiers is sufficient to ensure anonymisation depends on whether one interprets the GDPR as requiring a strict or risk-based approach to unstructured data.[115] If one adopts the strict approach and seeks to filter out all phrases to ensure that no edited document can be

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[113] Lison, Pierre, I. Pilan, D. Sanchez, M. Batet and L. Øvrelid (2021),

[114] As summarised in Weitzenboeck, Lison, Cyndecka and Langford (2022).

[115] Weitzenboeck, Lison, Cyndecka and Langford (2022).

traced back to its original version, this requires the removal of most of a judgment's content. Thus, the GDPR requirements for both publication of judgments and the general anonymisation should be addressed before a model is developed and implemented.

> **Recommendation 20:** Create a system for semiautomatic anonymisation of court decisions based on a legal review of GDPR requirements.

6. Conclusion (Draft outline)

1. Technology potential

- Digitalisation of courts – many areas for concrete development
- Rule-based programming for simpler aspects of dispute resolution
- Pilot with machine learning in dispute resolution
- Better presentation of legal information and possibilities for anonymisation

2. Approaching design and implementation challenges in Croatia

- Need a greater focus on user design – involve judges and others earlier
- Need legal reform and legal reviews for quite a number of technological possibilities – tech and law reform need to go hand in hand.
- Need a broader legal tech community and ecosystem in Croatia to get more synergies and development of data/techniques/solutions/competences
- Need a strategy to address resistance in legal culture

*Conclusion will be completed after comments on the first draft of the report

Recommendations Compiled (Draft)

Recommendation 1: Undertake a full transition to digital case management with paper-based aspects limited to identified and justified needs.

Recommendation 2: Facilitate for disclosure of evidence at an early stage by allowing submission of different digital formats and file sizes.

Recommendation 3: Facilitate viewing of evidence by all actors in its digital format, on both personal computers and in larger formats in the courtroom.

Recommendation 4: Further develop the e-Communication and e-Case systems, enabling the parties to access relevant information about their case.

Recommendation 5: Facilitate active case management (both legally required steps and good practices) through digital incorporation in the e-Case and e-Communication systems.

Recommendation 6: Facilitate a more widespread use of remote hearings by passing new or adapting existing legislation that gives the judge power to decide whether the hearing will be remote or physical, based on set criteria.

Recommendation 7: Ensure the existing video conferencing system in use safeguards fair trial rights, security and privacy concerns and the dignity of the courts.

Recommendation 8: Equip courtrooms with the necessary video conferencing equipment, and establish a solution for participants lacking the necessary video conferencing equipment. Guidelines for participating in remote hearings should be produced, and adequate technical support must be available.

Recommendation 9: Survey the rules on evidence and make sure that the rules are adaptable to digital evidence.

Recommendation 10: Full effect of digitising the court proceedings requires clear rules on case management which could be accompanied by digital solutions that facilitate the integrated hearing of cases.

Recommendation 11: The Ministry of Justice and Public Administration could pilot (or seek law reform) to permit fully online court procedures for smaller claims, mobilise court case data and/or design applications to develop tailor-made and bespoke digital processes for speedier case processing, and develop a self-service legal aid in one area to help citizens.

Recommendation 12: Consider piloting automated decision-making in simple or small claims.

Recommendation 13: Consider piloting presentation/prediction of sentencing/remedies for a discrete area of law.

Recommendation 14: Further examine the possibilities of blockchain systems in the justice sector.

Recommendation 15: Decisions of the courts should be accessible to any programmer via a public, documented Application Programming Interface (API) and downloadable JSON-format.

Recommendation 16: Display information on a decision of the court on the same URL as the text of the court decision.

Recommendation 17: Develop an API which makes Croatian legislation accessible, and make the legislation downloadable in bulk in xml-format and JSON-format.

Recommendation 18: Prioritize consolidated legislation in the search results in Narodne novine's search engine.

Recommendation 19: Establish the basis and specific provisions for the processing of personal data in relation to publication of court decisions in national Croatian law which strike a balance between privacy and transparency.

Recommendation 20: Create a system for semiautomatic anonymisation of court decisions based on a legal review of GDPR requirements.

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