Digitalisation of the Slovenian Justice System and Its Discontents[1]

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The digital transformation of the justice system is a global phenomenon with profound implications for the administration of justice. This paper investigates the integration of digital technologies into the judiciary aimed at enhancing efficiency, accessibility and transparency. However, the process is not without its challenges, including technical issues, resistance from traditionalist stakeholders, and complex legal and ethical implications. By examining the Slovenian experience through empirical research involving various court users, this study highlights the disparity between the high expectations of digital technology and the reality of its implementation. The findings suggest that while digital tools have the potential to enhance judicial operations, their adoption is often hindered by practical difficulties that require careful strategic management. This paper argues for a more integrated approach to digital transformation in the justice system, advocating for comprehensive planning, stakeholder involvement and clear communication strategies to address digitalisation's opportunities and obstacles.

Keywords: judicial system, court digitalisation, big data, artificial intelligence, algorithmisation, user experience, digital solutionism, digital infrastructure

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1   Introduction

In recent years, the Slovenian justice system has embarked on a journey of digital transformation, reflecting a broader global trend towards digitalising legal and administrative processes. In this article, we delve into the transformative effects of digitalisation, exploring both the anticipated benefits and the practical challenges that have surfaced. As we stand on the brink of what may be considered a technological overhaul of judicial processes, this paper aims to dissect the complex interplay between technology and legal practice, the high expectations from technology and its modest effects, offering a nuanced examination of how digitalisation impacts efficiency, transparency, accessibility and the fundamental nature of judicial operations.

For instance, initiatives such as introducing electronic case files and digital court registries are designed to streamline operations and reduce paper use, ostensibly speeding up case processing times and making information more accessible to legal practitioners and the public. However, as our study reveals, the reality is often more complex. Technical issues, resistance from users unaccustomed to new systems, and unforeseen legal and ethical implications frequently undermine these intended outcomes. This paper investigates these phenomena through detailed analysis, presenting a balanced view of the digital evolution in the criminal justice system.

The article is organised as follows. First, we explore the overarching context of justice in the era of digitalisation, discussing how global trends such as big data, algorithmisation, artificial intelligence and the technological and cultural imperatives of modern governance influence the criminal justice systems. We then transition into an empirical investigation, detailing the methodology and presenting the findings from our comprehensive study on court users' views on the digitalisation of Slovenian justice. This leads us into a detailed

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discussion where we juxtapose the optimistic projections for digital technology in the justice system against the stark realities observed through our research. Finally, the article concludes with reflections on the broader implications of our findings and proposes directions for future research, aiming to bridge the gaps between hyped technological solutionism, actual technological potential and real practical applications in judicial settings.

2 Digitalisation and the Justice System

2.1 Justice in the Context of Digitalisation and Technological Solutionism

When introducing technology into the administration of justice, it is important to understand the social context in which the technology is produced, i.e. a specific cultural, economic and social context of the specific moment and place.

The use of information technology (IT) in the administration of justice ranges from the digitalisation of court files, access to a wide variety of court registers, tracking of the current state of affairs in a specific case, access to online dispute resolution to the most technologically advanced forms of decision-making in the form of automated decision-making systems that use artificial intelligence (Bowling et al., 2017; Ryberg & Roberts, 2021). To contextualise the process of introduction of IT into a justice system today, the pervasive meta-trend underpinning all social systems that need to be scrutinised is digitalisation. Its fundamental characteristics are: 1) the emergence of big data stemming from digital trails of numerous and diverse activities, 2) the algorithmisation (artificial intelligence) that makes sense of these large amounts of data for more informed human decision-making, and 3) the globalisation of information society services leading to the dominance of large technology players and dependence of users on their terms, norms, and ethics and values behind these services.

Big data has become a game changer in understanding society and formulating social policies, such as health, social, macroeconomic and crime policy. This process has been referred to as the "Big Data Revolution" (Lavorgna & Ugwudike, 2021) and the "Big (Data) Bang" (McNeely & Hahm, 2014). Data has become conceptualised as the "new oil", triggering the fourth industrial revolution. As in other subsystems of society, court proceedings are leaving digital traces: pleadings of parties to proceedings are accepted by the courts in digital form, court registers are kept in digital form, main hearings are recorded and transcribed by means of speech technologies, etc. All this allows for the creation of a large amount of court data, and thus the possibility of linking them and finding new connections between these data for various ends such as streamlining administrative parts of court proceedings, case-log monitoring and analysis, the use of speech and language technologies, and even research purposes, e.g., to detect biased judicial decisions and geographical disparities in decision-making between courts (McNeely & Hahm, 2014).

Algorithmisation came to denote the process of making big data meaningful and actionable for decision-makers, and at its core is artificial intelligence (AI). In a narrow sense, AI is the branch of computer science concerned with simulating intelligent behaviour in computers in terms of their ability to mimic human behaviour. According to Russel and Norvig (2009), the simulation of human thinking requires the ability to learn and solve problems. For now, this simulation is often limited to a few narrow tasks. Still, with the emergence of new services based on generative AI, it is expected that the uses of AI will spill over into other areas in unexpected ways. Today, an example of such a spill-over effect of AI is shown by Large Language Models (LLM) such as GPT-3, GPT-4 and PaLM,[5] and large visual language models such as Flamingo. LLMs receive input data in the form of prompts that may be words, pictures, or videos, and such multimodal LLMs are converging uses, e.g., computer vision experts can use findings from the speech technology domain. Such mutual reinforcing of findings in various computer science fields consequently causes disruptive effects also across social institutions, including criminal justice systems.

In the judiciary, for instance, some professions are expected to become extinct due to new AI tools, such as recording clerks, who are being replaced by speech and semantic technologies, allowing automated transcription of audio recordings.[6] These technologies will, on the one hand, change several judicial professions and legal tasks, which include legal research, summarisation of judgements, real-time interpretation and so forth. Over-reliance on these technologies, on the other hand, already leads to mistakes today, when, for instance, lawyers use LLMs that hallucinate supposedly relevant judgements (Weiser, 2023). Algorithmisation may also lead to a de-skilling effect, which can limit the ability of judicial systems to act when technology fails. Moreover, the quality of judicial work is changing. The automation of recording with speech-to-text tools leads to a "lost in translation" effect, as the important content of depositions, such as the assessment

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5   GPT-3 has about 175 billion parameters, PaLM has about 540 billion parameters.

6   The Ljubljana District Court of the Republic of Slovenia introduced the speech-to-text programme *Tipko*.

of the credibility of speakers and the evaluation of evidence, is lost from the spoken dialectical words and replaced by formal wordings. Replacement by technology is therefore never without a price – it brings benefits, e.g., in the form of savings in the speed of transcription of texts, but also losses, e.g. in the reduction of language. It is, therefore, necessary to reflect on the critical skills that society must not neglect.

The global connectivity of devices and the differentiated accessibility of digital services to different segments of the population add a number of new effects of digitalisation at the individual and country levels. Both effects – on the individual and the country – are evident in modern justice systems. Uneven digitalisation generates a digital divide between people in terms of age and geographical regions (e.g., coverage of fibre optic infrastructure), who have more or less access to technology and information society services, which affects the principle of accessibility of justice. As regards the impact on the work of the judiciary, new vulnerabilities are emerging due to global connectivity. In times of geopolitical tensions, the judiciary becomes a target of cyber-attacks as an attractive target of the critical information infrastructure of a country. The question is, therefore, how to ensure the uninterrupted functioning of the judiciary.

Another important societal change in introducing digital technology to the judiciary is the prevailing perception that digital technology is the preferred solution to many social and individual, including judicial, challenges. The response to pandemics, terrorist attacks, global migration, economic crisis, environmental and other crises has become increasingly technological. Societal responses to these (sometimes only perceived) crises are becoming technology-mediated. The concept of technological solutionism critically examines the tendency to frame societal challenges in a manner that positions technology as a universal remedy, a practice that has attracted significant criticism (Morozov, 2013). Its idea is to focus on the "surface" rather than on the deeper or root causes of crises. Technological solutionism is joined by technological determinism, according to which only one future is possible, and that future is technologically underpinned and cannot be evaded. For example, several court users in our interviews pointed out that "technology is here, and it is here to stay". The perception is that technology cannot be avoided. Science and Technology Studies (STS)[7] are critical of technological solutionism by excavating and revealing the social and cultural meanings of technology and its implicit values. The central thesis of STS is that technology is never neutral because it is produced in specific cultural, political and economic settings

and is itself a result of and "contaminated" by such settings. Moreover, the technology, in turn, helps to reinforce such settings. In the STS view, technological dystopia is not inevitable, as the regulation of technology in social subsystems is a necessary and realistic option, which can also put red flags on certain uses of technologies and rule out technological solutions as inappropriate.

Therefore, the introduction of digital technologies into the justice system must be seen in the context of technological solutionism. Technology is being presented to the justice system as a panacea for the system's otherwise undeniable challenges. While technology operates according to the laws of nature, this does not mean that its entry into social systems or subsystems is neutral. For example, the values supporting AI automation are "doing less with more", making actionable data, and making the state "slim and agile". The justice sector should, therefore, not succumb to the ideas of technological solutionism and turn into a "digital dystopia" where private actors provide services or their infrastructure or where court proceedings are driven by an obsession with pursuing market definitions of efficiency at the expense of human centredness and subjectivity in judicial proceedings. This is not to say that technology cannot be used to advance the administration of justice, make the administration of justice more transparent (e.g., prompt publication of judgments and communication with a diverse set of the public), or improve access to justice. Attempts to "solve" the problems of contemporary justice systems, such as the increased backlog of cases and the increased distrust in the institutions of the rule of law, must therefore be seen in the context of the meta-trends of big data, algorithmisation and globalisation, underpinned with the ideas of technological solutionism and determinism.

2.2 Digitalisation as an Opportunity for a New Understanding of Justice

In epistemological terms, big data analytics has changed how we think about what counts as "true" knowledge and how we make sense of the world around us. The new analytical tools of Big Data are, therefore, according to some authors, harbingers of a new scientific paradigm entering its "fourth phase" (Kitchin, 2014). In this view, big data heralds a new era of knowledge creation, characterised by the "end of theory" and the new scientific method waiving the need to make hypotheses and test them (Anderson, 2008). This new epistemological approach to making sense of the world has important repercussions for the judiciary because it calls into question previous understandings of the knowledge of court experts, on the one hand, and because it allows for new ways of understanding what law is and the functioning of courts, on the other hand. However, this epistemological shift faces strong criti-

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[7] The most prominent representatives are Bruno Latour, Ian Hacking, Thomas Kuhn, David F. Noble, and Judy Wajcman.

cism from critical data studies, an emerging interdisciplinary area that scrutinises the ethical, legal, social, cultural, epistemological and political dimensions of data science, big data and digital infrastructures. Authors in this field are critical of the purported impartiality and objectivity of the new big data analytics and AI tools. The "end of theory" thesis and the idea that "data speaks for itself" are, on the contrary, themselves very ideological in the sense that they obscure the fact that all the processes of construction of big data and making sense of big data with AI tools are inherently human products and processes – with all the strengths and deficiencies inherent to all human activities.

While the criticisms of AI not being objective, unbiased and non-ideological have merits, science has already entered a new era with big data analytics and AI tools. The criticism, hence, does not mean that the new AI tools do not provide any new insights into the correlations, e.g., in big court data, and uncover new connections not visible to earlier scientific scrutiny. Research methods using AI have not only penetrated the "hard" natural sciences, as shown by the example of human genome sequencing or protein structure prediction, but also the social sciences. Computational Social Science[8] is concerned with the computational approach to studying social phenomena, including law. Technology is not only an object of legal regulation but offers new methodologies and a new "lens" to observe the world and regulation itself. It can be used to gain a more precise and deeper understanding of the law, its formation, its complexity, the interconnections between legal concepts and their evolution in jurisprudence. We can analyse how the law is understood differently in different judicial proceedings. Techniques of natural language processing (NLP) based on deep learning, for instance, facilitate network analysis, whereas the law is understood as a network of legal concepts, notions, principles, etc., and they have already opened up new ways of analysing law. The so-called Empirical Legal Studies (ELS) use new tools for analysing citation networks and machine learning to understand (the use of, evolution of, etc.) law (Panagis et al., 2017). The NLP techniques enable new analyses of word meanings and their disambiguation, sentiment and emotion analyses or text summarisation, to name a few.

New approaches to understanding the law and judiciary might help open the existing "black box" of human decision-making. New computer-based methods can, hence, also enable more transparent judicial decision-making, increase its quality and foster the principle of fair trials. This does not mean, however, that the new tools do not carry new caveats, such as the AI "black box" (Pasquale, 2016). There is no bias-free bonanza in human or AI-assisted decision-making (Završnik, 2021). However, new tools can shed new light on the differences in trials and court proceedings between different jurisdictions. They may reveal the understanding of legal doctrines by different courts and the disparities therein and offer insights into the evolution of legal concepts. The opportunity to educate judges and enable them to reflect on their judgments may also increase the quality of judicial proceedings, and judges are also not reluctant to make such educational use of AI (Jančar, 2018).

New scientific advances in data science and AI will have important implications for the principle of material truth in criminal proceedings. The development of IT has revolutionised many scientific disciplines, including the understanding of the human brain and our cognitive abilities (Hafner, 2019; Salecl et al., 2015; Završnik, 2007). Neuroscience allows new insights into the functioning of the human brain to unravel, e.g., whether memory traces are authentic or a witness has merely read about an event. Neuroscientific insights will open up new challenges for expert witnesses in courts. Moreover, it remains unclear what normative value will be ascribed to new insights into inner circuits and hardwires of the human brain; for example, whether insights that purportedly "prove" that a person does not have free will in a biological sense (should) have any impact on the legal concepts of free will.[9] Questions of science will remain in the domain of forensic experts as assistants to a judge, but new types of experts will appear in courts, which may increase conflicts about what constitutes "real science".[10]

2.3 Digitalisation and the "Fairness" of the Process

Information technology also brings new concepts of fairness that correspond to legal ones only to a limited extent. The concept of "fairness" used in the machine learning (ML) litera-

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8   Computational social science is an academic sub-discipline that deals with computational approaches to the social sciences. This means that computers are used to model, simulate and analyse social phenomena. Areas include computational economics, computational sociology, cultural studies, non-profit studies and automated content analysis in social and traditional media. The research focuses on social and behavioural relationships and interactions through social simulation, modelling, network analysis and media analysis (Wikipedia, n. d.).

9   The most famous are Libet's experiments on arm movement, where the brain's arm movement relay is thought to respond earlier in time than the relay resulting from a conscious decision to move the arm (The Information Philosopher, n. d.). For a critique of Libet's experiments, see (Šuster, 2007).

10 There are well-known accusations about the obsolescence of the scientific methods of experts in the field of clinical psychology in Slovenia (Areh, 2020).

ture has several specific meanings and is not directly transferable to the legal concept of a "fair" trial. These notions use the same signifier, but they entail different content. The concept of fairness is just one example of a mismatch in understanding the concepts in law and computer science. ML experts formalise the concept of fairness in machine learning prediction in several ways (Krakovsky, 2022). Gajane and Pechenizkiy (2018) introduce several notions of fairness in the ML literature and show how these correspond to notions from the social sciences. ML models, hence, may appear at first glance to be purely objective and unbiased. Still, these opaque models are typically only as good as the data on which they are trained and as ethical as the ethical value judgements built into the algorithms, according to Krakovsky (2022), who formalised the meanings of "algorithmic fairness". A concrete example of what the pursuit of different understandings of fairness in computational terms can mean and how it always requires a decision by computer scientists as to which conception of "fairness" they will pursue is provided by the dispute between data journalists at ProPublica and Northpointe over the COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) tool for predicting recidivism of parolees.

ProPublica claimed that COMPAS, a computer programme used by more than half of the states in the US at the time to help assess the risk of recidivism, was racist: it failed to provide an accurate recidivism prediction rate, setting it at twice as much for African Americans as for whites (Angwin et al., 2016). Alternatively, to put it differently, African Americans were twice as likely to be labelled as recidivists as white people, even if they did not re-offend during their parole. Conversely, whites were more likely to be labelled as non-recidivists even if they re-offended. In computer jargon, false negatives were disproportionally higher for one group compared to the other. Northpointe, the company that produced COMPAS at the time, claimed the opposite: the programme COMPAS is "fair" because it is equally accurate in correctly predicting recidivism rates for both groups: true positives and true negatives were predicted with the same error rates for white and African-American offenders. Was COMPASS then "fair"? The mathematician Chouldechova (2016) showed that in fact, both sides focused on different concepts of fairness. While several fairness criteria may be used to predict recidivism, not all criteria can be met simultaneously, as the prevalence of recidivism differed between these two groups. According to her calculations, it is not possible to optimise both concepts of fairness – at the false and at the true side – if the recidivism data for the two groups are different and there was no dispute about the fact that African-Americans re-offend more often than whites. The COMPAS predictive tool cannot optimise the calculations for both groups equally for correct and incorrect hits.

The lesson of this dispute over the COMPAS recidivism prediction tool is that it is impossible to satisfy several "fairness" criteria simultaneously if the prevalence of recidivism differs between different racial groups. The case also shows how the legal concept of "fair trial" is grounded in a completely different setting with a long history of judgements of what constitutes a breach of the principle of fair trial. The case furthermore reveals that prior decisions always need to be taken by computer designers about which understanding of fairness to 'encode' in the prediction instrument. As several concepts of fairness cannot be pursued simultaneously, a decision needs to be taken on which notion of fairness to encode and then optimise.

2.4 Digitalisation and Communication

In recent decades, personal and professional communication has increasingly shifted to, or at the very least incorporated, social media platforms as a key medium for interaction. Few studies discuss how courts use or should use social media sites.

Rare research into the Australian case examined the development of social media as a communication tool for Australian courts. In the Australian case, the Supreme Court started posting on Twitter because they perceived that the outside world required courts to participate in social media activity. However, other courts also began to use social media to communicate with the public after the public information officers from different courts formed a working group and met regularly to discuss the use of social media. All the courts in the study used Twitter; some also used other social media, such as LinkedIn, Facebook and YouTube. All members of the working group observed the positive effects of direct communication with the public but at the same time noted that communication through social media has its limitations, stemming from the limits of the platforms and internal restrictions (Johnston, 2017).

A study commissioned by the Slovenian Supreme Court in 2018 recommended that courts use social media based on a carefully prepared strategy (Renderspace d.o.o. et al., 2019). The presented literature thus suggests that the key decision for courts is no longer whether to use social media but rather the more complex question of what content the courts should or should not post on social media.

3 Methodology

The present study, which was carried out as part of the project "User 2030" (orig. *"Uporabnik 2030"*), is based on a qualitative analysis of in-depth interviews and focus groups

conducted with various professionals and other individuals interacting with the justice system. The respondent groups were formed with the help of the Supreme Court of the Republic of Slovenia, the Supreme State Prosecutor's Office, the Chamber of Notaries and the Community of Social Work Centres. Additionally, we contacted specialised associations and bodies representing (potential) court users, among them we reached out to all 62 regional chambers of crafts and trades in Slovenia to gain access to micro, small and medium-sized enterprises, the Chamber of Enforcement Officers of the Republic of Slovenia and several associations representing the interests of people with various disabilities, such as the Federation of Disabled Workers of Slovenia and Slovenian Association of the Deaf and Hard of Hearing. In conducting the interviews and focus groups, we adapted as much as possible to the needs of the respondents, who were invited to participate in two ways: face-to-face or using a video conferencing programme.

Between 30 May and 21 September 2023, a total of 85 respondents participated in fourteen focus groups and nineteen interviews. The participants came from diverse groups of respondents from within and outside the justice system: court trainees (orig. *sodniški pripravniki*), judicial advisors (orig. *strokovni sodelavci*), junior judges (judges who have been appointed three or fewer years earlier), registry users, the administration group of employees working in the human resources and finance departments and in the offices of presidents of the courts, prosecutors, attorneys, notaries, social work centres, as well as bailiffs and executors, and judicial experts and valuers, individuals with special needs and disabilities, foreigners, representatives of business associations, law students and young people under 30 years old, and elderly people above 65 years old.

Confidentiality was strictly maintained, and all identifying details were anonymised thoroughly. Due to the danger of identification, in this text their identity is protected further by only providing the general group of respondents in which a statement was made. Informed consent was obtained from all participants, following our commitment to ethical standards and the sensitive nature of the data collected. Both focus groups and interviews were semi-structured, covering four main overarching topics relevant to the future development of the court system: population, society, individuals and technology.

After data collection, the notes and transcripts were used to conduct an extensive thematic analysis using NVivo software, enabling a nuanced data exploration following Braun and Clarke's (2019) approach. While the scope of the study was wider, this paper is largely focused on the discussions within the last overarching topic, focusing on the process of digitalisation in the Slovenian justice system. The study's

qualitative approach facilitated a deeper understanding of how various stakeholders perceive the ongoing digital transformation in the judiciary, providing important insights into their expectations and experiences concerning the evolution of judicial information systems.

4   Results

Our study revealed complex and multifaceted themes that provide insight into the evolving landscape of the Slovenian justice system under digital transformation. These emergent themes reflect the intricate interplay between technology adoption, stakeholder expectations and the operational realities of legal practice. Specifically, our findings are organised into three broad thematic areas: the background processes, such as managing court files, the active management of courtroom proceedings, and forward-facing efforts, such as enhancing transparency and communication. We use one specific example of digitalisation for each of them to explain the dynamics at play in the court system.

In selecting examples, we focused on the experiences our participants had with technology that is either currently in use or being considered for adoption. Although our discussions encompassed their views on AI and LLMs, the reality of their situations rendered these discussions largely hypothetical. Nevertheless, the implementation of such advanced technologies is likely to follow a trajectory similar to the technologies we discuss here, reflecting the practical challenges and potential pathways observed in current digital initiatives.

In this section, we start with the "background work", which underscores the initial steps in the digitalisation of court files and records. The discussions highlighted a mixed reception to electronic case files, pointing out both the efficiency gains and the challenges, such as privacy concerns and system limitations. Next, we dive deeper into the immediate effects of digital technology on courtroom procedures, such as the impact of video recordings and digital transcription on the dynamics of main hearings. This theme explores the practical implications of digital tools in judicial processes, including the benefits for vulnerable participants and the obstacles such as technical issues and confidentiality concerns. Finally, we look at "work at the forefront", addressing the broader implications of digital engagement and communication strategies, focusing on the accessibility of court decisions and the judiciary's interaction with the public through modern communication channels such as social media.

By examining these themes together, our analysis aims to provide a comprehensive understanding of both the incremental

and transformative changes in the judiciary prompted by digitalisation. This holistic perspective helps to elucidate how technological advancements are reshaping judicial practices, stakeholder interactions and public perceptions of the justice system.

4.1 Background Work: Electronic Court Files

Slovenian courts typically still peruse physical court dockets, where files are printed and stored using a conventional, traditional system. However, in some legal areas, a transition towards electronic case files and dockets has already occurred; in others, it is still underway. As Slovenian courts gradually transition from traditional paper dockets to electronic case files, the shift is recognised as essential by both internal (employees) and external (clients) users for several reasons. First, it improves accessibility, allowing users to access files more efficiently and from different locations. Moreover, it simplifies the storage process, reducing physical space requirements and the risks associated with physical document preservation. Finally, it aligns with modern work practices, integrating more seamlessly with other digital tools and workflows. However, despite these advantages, our respondents, especially employees at the courts, have underscored a multitude of challenges that this shift presents.

Firstly, the existing hardware in the court system is often outdated and unable to meet even current needs, let alone the demands of running more sophisticated electronic filing systems. This inadequacy can lead not only to slow processing times, but sometimes also to the use of non-authorised, even private, tools in the judicial process.

"I receive the file, and it says: I cannot open the attachments. I have to write to the clients, asking if they can send it in PDF because otherwise, we cannot see the submission since we have such old equipment." (Registry User)

The underlying issue is, as expected, budgetary, but there are challenges at the implementation level as well.

"Courts are not even allowed to order computers, printers... Everything goes through the Supreme [Court]. Our IT staff keep records and know who has the oldest computers. Then, when the Supreme Court sends some new equipment, the IT technician knows who 'needs' the equipment most and distributes it." (Registry User)

Second, the new electronic files fall against a wide disparity in digital literacy among court personnel. Some judges are accustomed to traditional methods and find it challenging to adapt to electronic systems. This may partly be attributed to their age or seniority and thus unfamiliarity with the digital tools. The other reason for a reluctance to embrace the changes

might lie in their personal styles of work. Many court employees, especially judges, have developed specific methods for working with physical files, such as annotating and using sticky notes, which are not directly transferable to digital formats.

"Yes, age is definitely a factor in decisions. Yes, because judges are used to working this way and wouldn't change anything – they are used to sticking notes on files and underlining everything, it all still goes by hand..." (Registry User)
"For instance, we have two judges who can't even write emails; I get everything [written] in the case files." (Administration)
"We still have judges who don't know how to type and take up a whole day of the court reporter's time to dictate to her." (Administration)

Others, however, are very adaptive and learn much faster. Moreover, in the absence of a more active role from the judicial system, they occasionally seek solutions on their own, which at least proves the skill and initiative of the employees but creates chaos and imbalance, and potentially introduces risks for errors.

"An Apple computer allows for LiquidText. A colleague uses this programme. He has the file in this programme, he marks it, adds links to the attachments and when you click it takes you to that attachment... He invested in this programme himself... It's entirely his own private [effort]. But it is possible. It's just a pity that the Court doesn't provide this." (Judicial Associate)

This contrast in skills displayed by judges often requires a high level of computer literacy, particularly from court clerks and other supporting staff, putting additional pressure on them to bridge the gap.

"For example, the role of a court reporter has fundamentally changed in the last 15 years. We expect from a court reporter – it's not just a court reporter – it has to be [a person who is] highly trained in computerisation, we expect all sorts of computer skills, and to read minds, and to be able to inventory a file, not just a file – now all this has to be managed electronically, and to review the file..." (Administration)

Finally, the transition process itself is often cumbersome, requiring administrative staff to manage both physical and electronic files simultaneously. This duplication of efforts leads to increased workload and potential for error, making the transition period particularly stressful and inefficient.

"For instance, at some courts, there are judges who have everything done by others—they have a judicial assistant, a court reporter... Such a judge can work until the age of 70, and if he decides to do so, no one can tell him to leave. Technology moves forward, but this judge does not make an effort to get involved, to understand. /.../ And even if you have electronic case files, /.../ this judge wants them printed /.../." (Registry User)

The users also feel that innovations are being implemented without any necessary research and consultation. To truly benefit from the transition to electronic files and mitigate these challenges, the process must be streamlined and training for all users is essential.

> "And when it is being developed, someone should ask us, a smaller group, [or ask] at least a few other people who use it." (Administration)

Some of our participants felt that training might be able to help enhance the comfort level with new technologies across the judiciary, ensure smoother workflows, and ultimately, allow the courts to reap the full benefits of digital transformation without being bogged down by its challenges.

4.2 The Work at Hand: Managing the Main Hearings

Until recently, Slovenian court hearings were conducted in a manner where participants would speak, and the judge would summarise their statements for the record, dictating to a court typist seated beside them. Over the past decade, however, this practice has evolved with the introduction of an option to record hearings directly. This new method captures statements in their entirety and then transcribes them, bypassing the judge's summarisation. Judges have adopted this technological advancement to varying degrees; some use it extensively to record entire hearings, while others apply it more selectively, recording only specific procedural phases or statements. Still, some judges prefer not to use this recording option at all.

The variations in the adoption of recording technology within Slovenian courts and the fact that recordings have not completely replaced traditional methods, stem from more than just individual judges' attitudes towards technology. The traditional system, despite its cumbersomeness—requiring statements to be articulated first in their original form and then summarised by the judge—had the advantage of condensing the record of the hearing. This summarisation shortened the transcript and allowed judges to focus and distil the proceedings towards a decision-making trajectory. Although this process could be problematic in principle, potentially distorting the original statements unless participants intervened to correct inaccuracies, it effectively helped judges to organise their thoughts and streamline deliberations.

Conversely, the new system of direct recording eliminates the need for repetition, potentially shortening the hearings themselves. However, this approach introduces its own challenges. The verbatim transcripts are typically more extensive and less directed, which can complicate the judge's task of distilling the case's critical elements. Moreover, the comprehensive nature of these transcripts may lead to an increased administrative burden, impacting the overall efficiency of the judicial process.

While some of our respondents pointed out that they welcomed the recording of the main hearings, they also elaborated on the new challenges it generates. One of the attorneys commented that the recording of the main hearing produces a lot of useless material but also that he could no longer imagine going back to the way things used to be, with the judge dictating to the court reporter, as the proceedings take considerably longer. However, a prosecutor, for example, felt that the recording of hearings was counterproductive:

> "Just the fact that you turn on a recorder and somebody talks for two hours, and then it is transcribed, and then you look for that one sentence [in the transcript] that you are waiting for, and it is on page 200 after two hours; that is counterproductive, and that is how it has degenerated. It has absolutely degenerated." (Prosecutor)

Similarly, a judge admitted that recording the main hearing has led to significantly longer records than those produced before the introduction of this practice. Ironically, instead of reducing their workload, this has resulted in more work.

> "But then you end up with a transcript that's 100 pages long, instead of 5 pages you would have if you dictated, and you have more work and can get lost." (Junior Judge)
> "It's definitely easier if it's clarified right at the hearing, otherwise you're reading 40 pages of testimony, of which half a page is relevant. [...] I always have to listen to the recordings as well, because I get lost in the text... Like interrupted sentences, for example. Perhaps a good system would be just to listen." (Judicial advisor)

The transition to the new recording system has particularly affected court typists. Previously, their role involved sitting alongside the judge during hearings, typing as the judge dictated. This process required minimal editing post-hearing, making their task relatively straightforward. However, with the introduction of recording technology, while they continue to attend hearings, they now face the additional task of transcribing lengthy recordings afterwards.

> "We also had a case where the typist had to type 80 pages. [...] Yes, even the [regional] dialect is a problem." (Judicial advisor)

This significant increase in workload, coupled with the relatively low pay for their position, has led to high job turnover and challenges in recruiting for these roles.

Ironically, while technology has introduced new challenges into court proceedings, it is also being harnessed to resolve

these issues. One innovative example is the pilot programme *Tipko* at one of the courts, which has tested new automated transcription software designed to streamline the workload of court typists. However, this technology has not yet been rolled out to all courts, leading to a sense of anticipation and frustration among the staff, who are eager to understand why the deployment is proceeding so slowly.

> "Yes, now we are waiting for TIPKO. (laughs). Supposedly, it will arrive soon. They can't praise it enough in the litigation department." (Junior judge)
> "Complications began with the equipment needed for the programme to function, which not all courts possess. Now, we are waiting on the Ministry of Justice, and there are some personnel changes, and nothing is moving forward." (Deaf and hard of hearing)

Surprisingly, one group outside legal professionals that stands to gain significantly from this new development, once fully implemented, is individuals who are deaf and hard of hearing. While not the primary intended beneficiaries, the transcription tool and the associated sound technology could inadvertently provide them with a more equitable experience in court settings. This technology would enable them to actively participate in proceedings, giving them a voice without the need to resort to written notes as their primary means of communication.

> "We are eagerly awaiting this programme. We heard about it through the courts that hired it for their typists. Then, at a press conference, we came up with the idea that it could also be developed for our users." (Deaf and hard of hearing)

Additionally, the practice of recording hearings has been paralleled by the introduction of video recording, which facilitates two significant adaptations in how hearings are conducted. Video-recorded interrogations have been implemented specifically to protect individuals giving testimony due to their sensitive status – either as police collaborators or as vulnerable victims, such as in cases of rape or violence. On the other hand, initially exacerbated by the constraints of the COVID-19 pandemic and later by staff shortages in prisons that impede the transportation of remand prisoners to courts, videoconferencing has become increasingly used for conducting entire hearings remotely. It has also been used to alleviate the distance between disabled people and the courts that had previously seemed insurmountable.

> "I see digitalisation as an option that greatly improves the experience, especially for people with mobility impairments, or those who rely on respiratory devices – for them, it's very difficult to go anywhere in winter conditions. Some also have significant communication difficulties; digital technologies make it much easier. In this sense, technology is a saviour – it's easier to make contact remotely and be a participant." (Disabled person)

However, some have raised concerns about the risks of over-relying on technology, which might inadvertently worsen the position of disabled people.

> "I see a pitfall: the possibilities offered by digitalisation should not be a reason for some facilities to be inaccessible. It shouldn't be that someone at the court says, 'you don't need to come, we can enable you to participate from home,' but the person might want to come there like everyone else. Those who wish to come to the court like others should be given the opportunity to attend." (Disabled person)

In the majority of cases, however, where disabled individuals are not involved, the use of videoconferencing has led to the emergence of concerns that were previously highlighted in academic literature and are now being realised in practice.

Attorneys, for example, believe that remote hearings create a barrier between an attorney and a client during the hearing:

> "Personal communication with the client is indeed more difficult if it takes place via video conference. However, there are still more pros than cons." (Attorney)

At the same time, the respondents noted mistrust towards the use of videoconferences when combined with protective measures in criminal proceedings:

> "For now, there is still mistrust. In our practice, informants can testify via Zoom, they are disguised, and a court representative is present to guarantee that they are the correct person. However, these proceedings are still preferably carried out in person. Attorneys have significant mistrust towards such informants [where the sound and image of the person are 'distorted']." (Attorney)

Our respondents have also highlighted significant issues concerning the unreliability of the technology used in videoconferencing. They noted how disruptive it can be to the legal process when, for example, connections fail or when audio and video do not synchronise properly. Such technical glitches not only interrupt the flow of proceedings but can also affect the accuracy and effectiveness of the communication, potentially leading to misunderstandings or delays in judicial outcomes. These technological shortcomings underscore the need for more robust and reliable systems.

4.3 Work at the Forefront: Communication

Slovenian courts have traditionally maintained a cautious approach to public communication, reserving their interactions to official judgments. This reticence stems from a long-standing emphasis on maintaining a reserved and dignified posture. Adhering to this tradition, individual judges do not

offer personal comments; their rulings are intended to be their voice. Public relations activities have been established at the Supreme Court level but remain relatively subdued. In contrast, public communication has evolved considerably outside the judiciary in recent decades. Other governmental bodies, for instance, have embraced new communication channels, such as social media, which the courts have largely shunned. Our study delved into how our respondents view these disparities in communication strategies.

All of our respondents recognised a negative public attitude towards the courts, influenced by political or ideological attacks on individual judges or the judiciary as a whole. However, their opinions on the potential for courts to use social media as a tool for active public communication were not entirely unanimous. Their views can be categorised into two distinct groups. The smaller first group members believed that social media is not a suitable communication tool for the judiciary. Their perspectives, as captured in the following responses, highlight concerns about the appropriateness of social media for formal judicial communication.

"The last thing I would want for the judiciary is to start fighting with various Twitter warriors. There probably is a middle ground. […] I think that the civil public, which currently focuses only on attacking the judiciary, should be responsible for presenting the judiciary in the right light. I believe we need to achieve a shift here. And this shift would probably be accomplished by changing the perception of the judiciary itself […]." (Court trainee)

"I don't know if it's right for the courts to engage through these channels with those who write. Those who write might not necessarily [be genuine]; they could be bots or trolls just looking to provoke. It can lead to endless debates. [...] These debates should be conducted at a higher level." (Foreigner)

On the other hand, the respondents in favour of the courts' usage of social media, for example, observed:

"If [the use of social media] is [conducted] in a professional manner, I do not see it as wrong." (Court trainee)

"[The courts should appear] on social media, on television. As soon as the media say, 'X has been acquitted […], there is no balancing act, no one on the other side saying 'Yes, that is how it was' […]. Only one side is presented, and in such a pompous way: 'X has been acquitted again' […]" (Attorney)

"Explain in simple terms the reasons why he was acquitted. If it was the fault of the prosecution, then it's the prosecution's fault. If the fault lies in not being able to accept a piece of evidence because there was a mistake in the investigation phase, then that's the reason. But if you don't explain this, people will say 'all judges are corrupt anyway' [...]" (Attorney)

"It might be a mistake or a shortcoming that the court isn't working hard enough on this. We know, in a high-profile case, these are huge, desperate files, a pile of evidence, nobody who has not been directly involved knows what all this entails. But we know

that in practice, in the media, it's finished in one or two sentences [...]. I am thinking along these lines, not only in terms of the final decision but perhaps, which is a very fine line, what would be permissible, maybe already through the case itself, or not necessarily the specific case, but in terms of cases, some peculiarities and so on, or to pull back the curtain a bit for people on what it means, how the process actually unfolds." (Notary)

Furthermore, within the group that favoured the use of social media by the courts, we identified two distinct subgroups. The first sub-group supported publicly sharing a broader array of information and actively engaging with criticism from other social media users. However, they recommended maintaining some restraint in the extent of the courts' communications. The second sub-group advocated for restricting the courts' social media activities to disseminating general information, expressing concerns about the risks of engaging too deeply. They cautioned that responding to every critique could entangle the court in never-ending debates, detracting from its primary judicial functions.

5 Discussion and Conclusion

Our study builds upon the extensive literature reviewed, which explores the intricate dynamics of digital transformation within judicial systems. This literature foregrounds the concept of technological solutionism and its implications, particularly how digital innovations are often proposed as solutions to complex systemic challenges without adequate consideration of their social, cultural and practical ramifications. As observed in the literature, integrating digital technologies into the justice system is not merely a technical upgrade but a profound shift that touches on issues of accessibility, fairness and the very nature of judicial work (Krakovsky, 2020; Russel and Norvig, 2009). Our research aimed to empirically explore these themes by examining the specific context of the Slovenian judicial system. The results of our study illuminate a striking disparity between the optimistic expectations surrounding the adoption of technology in the judiciary and the complex realities of its implementation. This dichotomy highlights not only the inevitable challenges associated with integrating new technologies but also underscores a pattern where initial problems introduced by these technologies are often addressed with subsequent technological solutions.

5.1 Expectations vs. Reality

The enthusiasm for digital transformation, as discussed in our literature review, is often fuelled by the anticipated benefits of increased efficiency, accessibility and streamlined operations. However, as Bowling et al. (2017) and Ryberg & Roberts (2021) suggest and as our findings reveal, the reality is

frequently more complex and fraught with challenges. Budget constraints, outdated existing infrastructures, ingrained work habits and varying levels of digital literacy among court personnel all contribute to the complexity of implementing new systems. This study revealed that while technology promises to simplify processes, its introduction can paradoxically complicate them further, creating new issues requiring additional technological interventions. These findings echo the broader discussions in the literature about the "Big Data Revolution" (Lavorgna & Ugwudike, 2021) and the transformative yet disruptive impacts of big data and AI on societal structures, including the justice system.

5.2 Varied Levels of Digitalisation

Digital transformation in the judiciary operates at multiple levels, affecting both internal court operations and the broader interface with the public. Internally, digital tools can change how documents are managed, how cases are processed, and how communication within the courts is conducted. Externally, they alter how the public accesses court services and legal information. While some of these changes are highly visible, such as online filing systems or virtual court hearings, others – such as backend digital case management systems – remain largely invisible to the public yet are crucial for the overall effectiveness of the judicial process.

5.3 The Need for Strategic Implementation

One critical insight from our research, which aligns with the views presented by Morozov (2013) on technological solutionism, is the necessity for a more cohesive and strategic approach to digitalisation. The current piecemeal strategies often lead to fragmented systems that fail to meet the needs of all stakeholders. There is a clear need for a more integrated strategy that includes comprehensive stakeholder involvement from the outset. Engaging with all court users – judges, administrators and the public – can help ensure that the implemented technologies genuinely address the needs of those they are intended to serve and mitigate unintended consequences.

5.4 The Double-edged Sword of Digitalisation

It is evident from the responses in our study that while digitalisation is unavoidable and largely beneficial, the manner in which it is approached can either exacerbate existing issues or streamline processes. Poorly implemented digital solutions can lead to increased workloads, as seen with the introduction of extensive transcription requirements, or create barriers between the judiciary and the public it serves.

Conversely, well-implemented technology can enhance judicial efficiency and accessibility. This observation is supported by the literature on AI's potential and its pitfalls, particularly the "lost in translation" effect noted by Weiser (2023), where the quality of judicial work is compromised by over-reliance on imperfect technologies.

5.5 Enhancing Communication

Our findings, supported by Johnston (2017) and Renderspace d.o.o. et al. (2019), emphasise the importance of a strategic approach to communication within the judiciary, particularly through social media. A proactive communication policy could enhance public understanding of judicial processes, improve transparency and strengthen the judiciary's legitimacy.

Developing a clear strategy for social media use can help manage public perceptions and address negative feedback effectively. This approach not only protects judges' safety but also boosts their inclusion within the professional community, maintaining the integrity of the judiciary. Implementing comprehensive guidelines and training for judicial staff on social media use can foster constructive dialogue with the public, balancing judicial decorum with engagement.

5.6 Way Forward?

To effectively address all these challenges, future research and policy development could benefit from a tiered approach to technology adoption tailored to the specific needs and constraints at various judicial levels. A comprehensive digital strategy should also include ongoing training and support for all users of court technology systems, ensuring that every participant can effectively utilise these tools. Additionally, maintaining transparency about the goals and processes of digital transformation initiatives is crucial for managing expectations and cultivating a supportive environment among all stakeholders.

Digitalisation in the justice system is a complex, multifaceted endeavour that demands thoughtful strategy, comprehensive planning and inclusive stakeholder involvement. While the challenges are significant, they are manageable with a considered and pragmatic approach to technology integration. By aligning the digital transition with the realistic goals of enhancing judicial efficiency and fairness, courts can make significant progress towards modernising their judicial processes.

Future research should explore the specific impacts of digital tools on the day-to-day operations of the courts and the broader implications for justice accessibility and public

trust. It would be beneficial to conduct longitudinal studies to assess the long-term effects of digital transformations in the judiciary, focusing on both intended outcomes and unintended consequences. Additionally, comparative studies between jurisdictions with varying levels of digital integration can provide valuable insights into best practices and pitfalls to avoid. Research could also examine the role of artificial intelligence in decision-making processes within the judiciary, exploring both its potential to enhance judicial efficiency and the ethical considerations it raises. This would contribute to a deeper understanding of how technology can be harnessed to support the fundamental principles of justice while ensuring it does not compromise the human elements that underpin the legal system.

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Digitalizacija slovenskega sodstva in njene težave

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Digitalno preoblikovanje pravosodja je globalen pojav, ki ima globoke posledice za pravičnost pravnega odločanja. Ta prispevek obravnava vključevanje digitalnih tehnologij v pravosodje, katerega cilj je povečati učinkovitost, dostopnost in preglednost. Vendar ta proces ni brez izzivov, vključno s tehničnimi vprašanji, nasprotovanjem bolj konzervativnih deležnikov ter zapletenimi pravnimi in etičnimi posledicami. S preučevanjem slovenskih izkušenj z empirično raziskavo, ki vključuje različne uporabnike sodišč, ta študija opozarja na neskladje med velikimi pričakovanji glede digitalne tehnologije in resničnostjo njenega izvajanja. Ugotovitve kažejo, da digitalna orodja sicer lahko izboljšajo delovanje sodstva, vendar njihovo uvedbo pogosto ovirajo praktične težave, ki zahtevajo skrbno strateško odpravljanje. Primernejši se tako zdi celovitejši pristop k digitalni preobrazbi v pravosodju, ki zajema celostno načrtovanje, vključevanje zainteresiranih strani in jasne komunikacijske strategije za obravnavanje priložnosti in ovir, ki jih prinaša digitalizacija.

Ključne besede: pravosodni sistem, digitalizacija sodišč, veliko podatkovje, umetna inteligenca, algoritmizacija, uporabniška izkušnja, digitalno rešeljstvo, digitalna infrastruktura