

Digital Technologies for Better Justice

A Toolkit for Action

Authors:

Antonio Cordella
Francesco Contini

Editors:

Arnaldo Posadas
Darinka Vásquez Jordan

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Abstract*

Practitioners in the justice sector confront difficult challenges in sorting through how the plethora of different e-justice technologies affect the accessibility, legitimacy, legality, and economy of judicial systems. These judicial values are crucial determinants of the quality of justice and the adoption of e-justice technologies should depend on how they affect those values. This report presents a methodology and toolkit that practitioners and analysts can use to navigate the design and assessment of e-justice projects to guide decisions on e-justice investments. It highlights factors that must be considered in deciding whether an information and communication technology project is likely to improve the judiciary's performance and, in turn, support political and economic development in Latin America and the Caribbean.

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Prologue

As in other parts of the world, countries in the Latin America and Caribbean (LAC) region are experiencing increasing demand for improved institutional capacity to deliver digital government services. This demand presents a significant challenge as it reflects significant gaps in the region's capacity to deliver efficient and responsive public services. In this context, LAC countries are increasingly looking to the development and diffusion of information and communication technologies (ICTs) in the public sector as a relevant strategy in their quest to modernize their public sectors. Indeed, ICTs are considered central for the public sector to a more efficient performance of their main tasks (Dunleavy Margetts, and Bastow, 2006). When done well, their adoption has changed the way in which government agencies deliver public services, collaborate with each other in finding solutions to complex problems and, in turn, transform the way in which public value is delivered to citizens (Christensen and Laegreid, 2011).

Digital technology has been transforming the way government services work. In the case of justice sectors, ICTs not only offer a better way to perform existing practices but also present the potential for creating new practices and fundamentally changing the way justice administrations deliver services. Digital justice can build smarter justice systems through the incorporation of technology-based solutions such as machine learning, case management systems, process automation, online conflict resolution, legal research, litigation analysis, case prediction, and data visualization, among others.

In LAC, where justice sectors have been particularly affected by low public confidence levels and allegations of improprieties, the promises of digital justice can be particularly attractive. Indeed, digital justice has the potential to generate important benefits in terms of quality and legitimacy, such as (i) greater efficiency and effectiveness in case management, by expediting processing time and improving the quality of information; (ii) better access to justice services, by the use of online tools such as digital processes and virtual hearings; and (iii) increased transparency, by facilitating access to information, securing legal documents, and reducing opportunities for corruption.

Implementing a digital justice approach in a country involves three main aspects. First, transformation and redesign of justice services around users' needs. This implies that services are built on the needs of all users, both internal (officials, judges) and external (lawyers, procedural parties). Second, rethinking the way justice authorities work by incorporating new technologies. This means making a complete transition from paper-based processes to digitized processes, which, in turn, implies the establishment of horizontal and flexible work methods and the recruitment of new professional personnel, such as data analysts and computer scientists and designers. Lastly, improvement data collection and management of digital information, including the incorporation of data systems that allow interoperable platforms to facilitate work among different entities. In the justice sector, this refers to systems that allow various actors such as police officers, prosecutors, courts, and prisons to exchange information. The interoperability of these systems can, in addition, allow the collection and analysis of more accurate information in the context of policymaking and policy reform.

Its potential benefits notwithstanding, the adoption of new technologies in the justice sector has been slow and, in some cases, inefficient, expensive, and poorly designed. Indeed, the introduction of ICTs in the justice sector has lagged behind other government sectors. This can be explained, at least in part, by the inherently complex organizational structures, resistance to the adoption of the new processes, the sensitive nature of the information that is frequently involved in judicial cases, and the politically complex interaction between different actors interacting within justice systems.

As will be argued in the present work, ICTs can have especially consequential impacts in the context of justice sectors, as digitized judicial processes can affect the way in which law is interpreted and enforced. Law regulates every aspect of human conduct, including public sector activities that generate social, economic, and legal effects. E-government policies aimed at transforming the justice sector, therefore, can have a long-lasting impact on the social, economic, and legal spheres as they change previous institutional arrangements traditionally enforced by justice systems (Contini and Cordella, 2015).

Thus, the introduction of digital solutions in justice administrations should be understood as a systemic and comprehensive reform that goes well beyond the technological. This is a change that involves not only legal, organizational, and cultural reforms affecting the functioning of a variety of institutions that are, in many cases, totally independent of each other, but also the ethical aspects generated by the implementation of such tools in the justice sector. For example, the digitalization of judicial procedures requires the standardization and simplification of processes in several instances that, in turn, may require legal modifications affecting the rights of those involved in each process, as well as parties to future similar cases.

Considering this complicated context, countries should be encouraged to make use of modern technologies to support the work of their judicial systems, as well as to carefully consider the necessary legal, institutional, and cultural consequences of their use. After all, regardless of considerable challenges, the rapid pace of technological development (and the increasing need of governments to provide better services) make their eventual adoption all but inevitable in the evolution of judicial systems around the world (Popa, 2019). With this work the authors attempt to present the advantages that continuous improvement of technologies can make available to the region's justice sectors, and to offer a clear-eyed vision of the far-reaching effects that such innovations are likely to have.

White Paper



1.1 Introduction

The rationale for this study is based on the findings of the 2017 Latinobarometro survey, which identifies investments in e-justice as a key step in the modernization of the judiciary. Core drivers for these investments are the need for greater efficiency and cost effectiveness in judicial actions, increased transparency, and the fight against corruption in the justice system.

Investments in information and communication technologies (ICTs) aimed at increasing judicial efficiency and reducing the cost of administration and management of the judiciary are common all over the world. Research has highlighted the importance of considering the complex impact of digitization of the judiciary on the key judicial values of accessibility, legitimacy, legality, and economy of judicial systems. The low trust in judicial institutions and the adverse impacts of a weak judicial system on economic growth and social development affect most Latin American and Caribbean (LAC) countries.

Judicial reforms led by ICTs can be very effective in addressing these problems. However, positive outcomes require proper design and management of ICT-driven judicial reforms (Cordella and Bonina, 2012). This white paper reviews some of the most relevant ICTs used in the judiciary and the relevant academic literature that analyzes their impact on judicial performance. Based on this analysis, the paper presents a toolkit designed to help decision makers choose the most appropriate investments in e-justice technologies. The white paper also discusses the relationship between judicial values and ICT and outlines the directions along which they bear upon one another with respect to e-justice systems. It is crucial in this respect to define these judicial values and spell out the ways in which ICTs impact them.

Judicial values are norms and principles that govern the accessibility, legitimacy, legality, and economy of judicial systems. These norms and principles are contextually and culturally embedded. To

a considerable degree, they shape the development and deployment of ICT-based judicial reforms aimed at improving the efficiency and effectiveness of judicial systems. Thus conceived, e-justice reforms form the backdrop for more complex social or institutional transformation.

The focus on judicial values is also a useful one to assist the Inter-American Development Bank (IDB) in devising ways to intervene to support political and economic development in the LAC region by strengthening the efficiency and effectiveness of judicial reforms and molding the impact they have on economic, social, and institutional transformations. The analysis distinguishes among various e-justice solutions: case management systems (CMSs), judicial support systems, e-filing, and criminal justice chain interoperability or integration.¹ While increased interoperability or integration can be a desirable solution from a technical and functional standpoint, developing them is very demanding, and failures are frequent. Hence, the potential advantages achieved through increased interoperability or integration must be weighed against the technical and institutional challenges associated with implementing specific projects. This paper focuses on the impact of the different e-justice systems on judicial values, and on how best to design and deploy these systems to enhance the values generated by each system. To this end, it analyzes the characteristics, properties, and conditions that make each e-justice system worthy of being implemented.

The technological, organizational, institutional, and infrastructural factors that shape a judicial system can be changed with appropriate policy interventions (although the degree to which the desirable features of each category of factors can be controlled varies). The combined outcome of the four clusters of judicial values must consider the interdependences among them and that shape them. The IDB should invest in ICT projects that aim to improve the overall balance of the various judicial values. This should be tempered with the understanding that ICT-mediated judicial systems are only the first step in strengthening judicial values. The end result will depend on the combined effects of applying different ICTs to strengthen the four key judicial values, as well as the institutional and social conditions that shape the judicial context where these values are formed and defined. As a result, it seems clear that the IDB should develop or decide to support projects that, via the use of ICTs, change a set of those characteristics, properties, or conditions that improve that balance of the overall values.

Greater access to judicial services or institutions is a necessary precondition to enhancing the value they deliver but does not per se guarantee that the judicial system will have positive impacts on economic growth and social development. The legality and legitimacy of judicial actions are fundamental preconditions to guaranteeing positive impacts on economic growth and social development. Investment in ICTs in the judicial system to support economic growth and social development should focus on the configuration of the four key judicial values that shape the judiciary, rather than on the impact on individual preconditions. This white paper provides the tools needed to lead ICT-driven judicial reforms that properly balance their impact on the different key judicial values.

¹While interoperability refers to the capacity of different systems to work together and exchange data, documents, and information, systems integration refers to the aggregation of disparate systems into a larger system capable of providing overarching functionality (see also Section 1.7.4).



1.2 Background

Procedures carried out by courts of law and public prosecutors' offices (PPOs) to administer justice (i.e., settle or resolve disputes and judge criminal offences) need to meet two goals. They must be lawful (i.e., fully compliant with existing laws) and economical (i.e., efficient, effective, and timely). Furthermore, to be seen as legitimate, judicial institutions require a high degree of transparency and accountability for their performance, procedure flows, and decision-making processes. Last but not least, judicial procedures can offer an effective remedy to the disputes that emerge in society only if they are accessible to citizens, businesses, and anyone requiring justice. When properly designed and deployed, technology can help courts and PPOs strive to achieve the key judicial values of legality, economy, legitimacy, and access to justice. ICTs applied to justice institutions can help achieve these goals and enhance the overall performance of judicial systems.

This paper analyzes the features of these technologies and provides a framework to guide the key decisions to be taken at the design stage. It also discusses common development and deployment problems that should be considered when approaching different ICT developments in the judiciary. It provides the background knowledge on court technology needed to apply the proposed tool-kit to guide investments in effective e-justice developments. The paper focuses on the following e-justice solutions:

- CMSs and judicial support systems
- E-filing and electronic exchange of procedural documents
- Criminal justice interoperability platforms

The white paper also discusses in depth the interaction of these technologies with the key judicial values. It uses international experiences as case studies in the deployment of e-justice systems, specifically, those of Italy, Spain, Portugal, England and Wales.² The analysis of these experiences and of some cases of “failures” in the development of e-justice is useful to understand the challenges that the development of different justice systems in the LAC region will face and better identify the risks associated with e-justice reforms.

To properly examine the complex interplay between ICTs and e-justice reforms, it is crucial to understand some of the essential features of ICTs and their impacts on e-justice reforms. Technology is not just a tool; it has unique regulative and configurative properties that can impact judicial systems in a variety of ways.

E-justice reforms do not occur in an institutional and technological vacuum. The unique institutional and e-government technological ecosystem of each country must be taken into account when e-justice reforms are planned, designed, and implemented. The national e-government framework provides common technological standards, architecture, and functionalities that can be leveraged to

² Scotland, Northern Ireland, and England and Wales have independent judicial systems. Hence, the United Kingdom cannot be considered a unique entity where the judiciary is concerned.

reduce the complexity of e-justice development and to increase systems compatibilities and interoperability among e-justice systems and with other relevant e-government systems. Different countries entrust the governance of the justice systems to different stakeholders, such as the ministry of justice, the judicial council, the supreme court, or the office of the attorney general. While the specific impact of these differences on the deployment of e-justice systems is beyond the scope of this white paper, they should be acknowledged whenever an e-justice project is initiated.



1.3 The Regulative Power of Technology

Technology is often treated as a linear catalyst of administrative and organizational transformation (Cordella and Tempini, 2015). More nuanced accounts of the properties of technological artifacts can help clarify the impacts of ICT on reform of the public sector, including the judiciary. ICTs have impacts far more pervasive than increasing organizational productivity (Kallinikos, 2005). They have properties that frame the causal connection between the organizational practices, events, and processes they mediate (Kallinikos, 2005; Luhmann, 2005). ICTs frame and structure predefined logical sequences of actions (Ciborra and Hanseth, 1998), mapping the organizational procedures and practices they intend to mediate (Luhmann, 2005), rather than simply provide neutral support to better execute existing organizational activities. Therefore, ICTs construct sets of structured sequences and interdependences that regulate the execution of organizational procedures and processes. Consequently, ICTs impose regulatory frameworks that structure organizational activities, providing stable and standardized means of interaction and coordination (Bovens and Zouridis, 2002; Kallinikos, 2005). These regulatory frameworks are shaped into the technical functionalities of the systems. Work sequences and flows are embedded into the technological functions, reducing the procedural complexity in causal or instrumental relations that are standardized and stabilized in the technical scripts. The design of ICTs selects relational causalities that are described in the scripts of technology while excluding other possible causalities by eliminating relational interdependences into the very same scripts.

The process by which this happens is described in the literature as functional simplification and closure (Cordella and Tempini, 2015; Kallinikos, 2005). Functional simplification and closure are the processes by which organization's activities, processes, or operations are programmed into the script of the technology. Technology has specific functional requirements that only allow activities, processes, or operations to be performed in specific ways. Therefore, the performative logics embedded in the technology determine how technologically mediated operations are fulfilled.

As the whitepaper illustrates, e-justice systems have different impacts on users and office workflows. For example, the CMS can structure the workflow of courts or PPOs, offering a preestablished path of action to carry out the proceedings. E-filing applications or criminal justice interoperability platforms guide the electronic exchange of procedural documents and structure in detail how to perform the procedural actions, such as filing a case. The rules the code of procedure and other relevant regulations are inscribed into the computerized system that regulates the proceeding. By determining what is and is not allowed, technology becomes the primary form of guidance for all those who work with the system. The interpretation of the law and the transformation of legal orders into case management practices are, to varying degrees, removed from clerks' discretion and transferred to the

system developers. When using the CMS, clerks cannot decide what data can be entered to register a plaint or which form can be used to serve a judicial decree to case parties. All these actions are established at machine level and forced by the rules and interfaces of the system.

ICTs also constrain the causal chain connecting selected organizational activities, processes, and operations in predefined, stable, and standardized patterns. These processes are the essential characteristics of functional simplification and closure. Functional simplification is the process by which information technology structures the problem into sequences of operations that must be performed sequentially to solve it. Functional simplification outlines the sequence of operations that information technology structures, performs, and standardizes. As information technology standardizes sequences of operations, it attempts to disentangle and disambiguate the operations from the specific legal, organizational, and institutional domains to which they belong. An autonomous judicial culture, in which judges' chambers dealing with judicial procedures in heterogeneous ways, multiplies the entanglements and makes it extremely difficult the disentanglement and disambiguation the development of e-justice requires.

ICT selects and extracts the sequences of operations to be performed from the specific legal, organizational, and institutional domains to achieve a specific outcome that satisfies particular requirements (Kallinikos, 2006). ICTs reduce the specific legal, organizational, and institutional complexity by capturing the essential causal chains needed to produce an output. Looking at the previous example, ICTs standardize and disentangle judicial procedures, reducing the judges' autonomy in handling the proceeding.

Functional closure is a process by which ICTs reduce complexity to produce an output. It entails the black-boxing of sequential operations, ensuring that their execution is rigidly structured into the technological code. This will protect the black-box causal sequences from undesired interference and will provide the needed stability to ensure reliability when repeating the sequences (Kallinikos, 2006).

Ultimately, information technology standardizes operations to be executed automatically. The automation of the operations structured and executed by information technology prescribes that the operations maintain an autonomous character from the context from which they originate. While users interact with information technology, the computations that are executed because of user interaction remain autonomous in their operation. User interaction is only open in certain steps of the operation (e.g., data input and command confirmations). The operations that occur between steps of interaction are unmodifiable by the user. Indeed, ICTs construct actions against a simple and robust world (Berg, 1998) that is unambiguous as it is self-referential and opens to external inputs only when reaching one of the designed points of user interactions.

Functional simplification and closure separate the operation of ICTs from the legal, organizational, and institutional processes and practices that they execute (Kallinikos, 2006). Once legal, organizational, and institutional procedures and protocols are delegated to technological automation, the abstraction that functional simplification produces implies that procedures and protocols are, to a degree, disconnected from their original legal, organizational, and institutional settings. The legal framework and the

code of procedures are still in place, but their constraints and the pathways of actions they provide are transferred to technology. The executions of procedures and protocols become highly regulated through the automated and standardized sequences ICTs execute. This equates ICTs to a regulative regime (Kallinikos, 2009) that stabilizes and structures legal, organizational, and institutional interactions (Bovines and Zouridis, 2002; Kallinikos, 2005). In the end, the ICT-mediated workflow the e-justice platform provides becomes the code that regulates judicial operations.

To fully appreciate the nature of information technology operations, both concepts of functional simplification and closure must be understood, since each of the concepts concerns a different and limited aspect of the functional operationalization that an information technology constitutes. While a specific technology can structure organizational activities to make them more or less aligned with organizational needs, the alignment brought about by functional simplification and closure is not quantitatively measurable. It makes no sense to say that one technology is more functionally simplified than another, since all technologies embody different configurations of functional simplification and closure. Functional simplification and closure are not directly commensurable to quantification. However, different configurations can be evaluated and compared in terms of their effects, since different configurations will perform in ways that are more or less aligned with organizational needs.

The analysis of the effects of functional simplification and closure configurations on judicial organization and practices requires an understanding of their implicit and explicit impacts on the fundamental judicial values and the institutional, technological, and infrastructural settings that act as background for the implementation of e-justice reforms. Therefore, this white paper posits that the regulative powers of ICT should be central to any analytical toolkit created for this purpose.

Effective judicial procedures require mechanisms, structures, and processes embodied in, or expressed, by a variety of institutions, organizations, or services, and represent an essential part of the nature of the State and of contemporary democracies. Indeed, in the context of modern democracies, individual, business, and institutional relations increasingly unfold within formally regulated contexts. This makes judicial dispute resolution an essential means for managing and coordinating social, business, and institutional relationships. The values the judiciary delivers are mediated and shaped by institutions and organizations, and involve interactions among individuals (e.g., lawyer, judges, clerks, case parties, and witnesses). However, such interactions are shaped by the formal codes and technological artifacts that enact and structure the actions of individuals, organizations, and institutions that comprise contemporary society (Luhmann, 2005; Kallinikos, 2004). These interactions result in techno-legal-institutional entanglements that shape the action of the judiciary and its outcomes. Thus, techno-legal-institutional entanglements should support the characteristics of legality, legitimacy, accessibility, and economy of a specific judicial system. Against the backdrop of these observations, it is important to distinguish between the direct impacts ICTs have on the four key judicial values of (i.e., accessibility, legality, legitimacy, and economy) and the overall impact that the combined effects have on the *quality* of the judicial system.

However, these two aspects are linked. ICTs impact the four key judicial values, which has important implications for the way a particular judicial action is delivered. Though, the overall impacts of ICTs on the quality of the judicial system concern the intertwined effects that all the transformations ICTs

trigger in the different judicial values have on the way in which the overall judiciary works. Although this study focuses on the role of ICTs in the development and delivery of e-judicial services, it also seeks to capture the mutual effects that are essential for assessing the transformation of the judiciary when ICTs are deployed to strengthen one or more of the key judicial values. The contribution of this study is its attempt to disentangle and reconstruct how technological, legal, and institutional properties combine to establish the preconditions for effective judicial reforms.

1.4 Judicial Values

The primary function of courts and the justice system is resolving disputes. In doing so, “judges are charged with the ultimate decision over life, freedoms, rights, duties, and property of citizens” (United Nations, 1985). To accomplish these critical functions, courts and PPOs operate in a highly regulated landscape. The regulations that guide and frame judicial action are designed to foster and preserve a set of fundamental values: impartiality, independence, fairness, and equality. These values are so deeply ingrained in judicial behavior and court organization that the administration of justice cannot be detached from them. Accordingly, they are the foundation of international judicial standards, judiciaries’ mission statements, and policy discourses on judicial reform. The Universal Declaration of Human Rights³ prescribes equality before the law, the presumption of innocence, and the right to a fair and public hearing by a competent, independent, and impartial tribunal established by law. The Covenant on Civil and Political Rights further guarantees the right to be tried without undue delay (timeliness).⁴ Article 8 of the American Convention on Human Rights affirms that “every person has the right to a hearing, with due guarantees and within a reasonable time, by a competent, independent, and impartial tribunal, previously established by law.” The Statute of Iberoamerican Judges lists various values, among which are independence and impartiality.⁵ Article 1 of the Magna Carta of [European] Judges states that the mission of judicial institutions “is to guarantee the very existence of the Rule of Law and, thus, to ensure the proper application of the law in an impartial, just, fair and efficient manner.”⁶ The Bangalore Principles on judicial conduct identify six core values of the judiciary: independence, impartiality, integrity, propriety, equality, competence, and diligence.⁷

While there is consensus on the importance of judicial values, there is no consensus on a single set of universal judicial values. Indeed, academic literature, public debate, and international standards do not identify a single set of judicial values. An analysis of international standards and a review of selected mission statements and strategic plans of courts and justice systems demonstrate the wide variety of values that underpin judicial operations. The first column of Table 1 summarizes the findings. Even a cursory review revealed a long and heterogeneous list of values. The risk of producing such lists is that the variety of values to be considered becomes complex and difficult to manage.

³ <https://www.un.org/en/universal-declaration-human-rights/>.

⁴ <https://treaties.un.org/doc/publication/unts/volume%20999/volume-999-i-14668-english.pdf>.

⁵ <https://www.icj.org/wp-content/uploads/2014/10/Statute-Iberoamerican-Judge.pdf>.

⁶ <https://rm.coe.int/16807482c6>.

⁷ https://www.unodc.org/pdf/crime/corruption/judicial_group/Bangalore_principles.pdf.

TABLE 1. Values and the key judicial values

Value as identified in a surveys of judicial core values	Key Judicial values
Access to Justice (Equality and costs)	Access
Consistency (procedures and decisions)	Legality
Courtesy, dignity, and respect (treatment of all with)	Legitimacy
Effectiveness (enforcement)	Legality
Efficiency	Economy
Independence	Legality
Judicial quality	Legality
Professionalism (competence, efficiency, and ethical values)	Legality
Quality of the service	Legitimacy
Rule of Law	Legality
Speed	Economy
Transparency	Legality
Accountability (managerial/unambiguous, predictable, and understandable action)	Economy
Continuity and coherence (in the application of the law)	Legality
Economy (good stewardship of public funds and property)	Economy
Effectiveness (use of resources)	Economy
Ethical rules	Legality
Fairness	Legality
Integrity (honesty, high moral and professional standards)	Legality
Predictability	Legality
Publicity (of procedure and hearings)	Legality
Respect and confidence of an informed public	Legitimacy
Sensitivity (to an increasingly diverse society)	Legitimacy
Timeliness	Economy
Impartiality	Legality

To avoid these problems, other studies have produced shorter inventories. The International Framework for Court Excellence distilled 10 “core values”: equality before the law, fairness, impartiality, independence of decision-making, competence, integrity, transparency, accessibility, timeliness, and certainty (Consortium for Court Excellence, 2008). The risk of such an abbreviated list is that it omits some important values. The International Framework for Court Excellence, for example, does not mention accountability or values related to procedural justice, such as trust and legitimacy.

To be able to consider a comprehensive set of values and avoid the associated complexity is to refer to consider more abstract concepts that can embrace multiple values. Recent papers have argued that the rule of law (or government by the law), legitimacy (or democracy, hence, government by the people), and economy (or government by resource scarcity) have the capacity to include a wide range of values that are relevant in the administration of justice (Contini, 2017: 10–13). As a result, this whitepaper does not provide a full list of judicial values, since this work can be done properly by

the courts or by the analysts involved in the assessment and in general by policy makers. Rather, it provides a set of meta or key judicial values: the principles of legality, economy, and legitimacy and the prerequisite of access. This set of key judicial values allows the judiciaries and the specialists using the toolkit to add those values that they deem relevant for their own institution or jurisdiction. Indeed, decisions on how to balance the values that should underpin judicial action are quintessentially political ones. The white paper and the toolkit are designed to offer a framework to help design ICT solutions that can better deliver the chosen balance of judicial values.

Key Judicial Values

Legality

Legality is the principle by which all persons, institutions, and entities, public and private, including the state itself, are accountable to laws that are publicly promulgated, equally enforced, and independently adjudicated. These laws must also be consistent with international human rights, norms, and standards. They require measures to ensure adherence to the principles of supremacy of law, equality before the law, accountability to the law, fairness in the application of the law, separation of powers, participation in decision-making, legal certainty, avoidance of arbitrariness, and procedural and legal transparency. Hence, the rule of law (or legality) clusters the primary set of values (and institutional features) with which courts have worked for a long time.

Economy

Courts are constantly operating under conditions of limited resources. This is a consequence of the universal condition of resource scarcity—financial, temporal, human, or others. Hence, courts must endeavor to be efficient, effective, timely, and accountable. These prerequisites allow them to produce effective results while making the best possible use of available resources.

Legitimacy

Legitimacy is construed here from a social or democratic perspective rather than a legal one (which is dealt with by legality). The constitutions of many European and American countries affirm that “justice is administered in the name of the people” or “emanates from the people.” The principle of representation, which confers democratic or social legitimacy, are relevant for the judiciary. This means that citizens are in the position to evaluate the judiciary and the services it provides, and not that judges are selected according to the desiderata of the people. Consequently, the search for (social) legitimacy should guide judicial institutions. This has implications at the operational level. Research on procedural justice (Rottman and Tyler, 2014; Tyler, 2003) demonstrates how legitimacy is associated with voice (i.e., litigants’ perception that they have an opportunity to be heard), respect, neutrality, and understanding (i.e., litigants’ comprehension of the language used, procedures undertaken, and decisions made).

Access to Justice

Access to justice is a vital element in any discussion of key judicial values. Access to justice is defined as the absence of barriers obstructing the access to judicial services. It is often seen as a value that the judiciary must enforce. The equation is simple: in the absence of access, there is no justice. Protecting access to justice is crucial in times of budget cuts that often results in increased court fees, or restricted

rights to appeal. Hence, to guarantee access to justice shall be considered a prerequisite in every judicial reform that aims at enforcing the entire set of legal prescriptions.

Matching Values with Key Judicial Values

As Table 1 indicates, each value in list 1 can refer to at least one of the three principles that the authors have identified as key judicial values. Limiting the number of values to three streamlines the discussion and facilitates the assessment of the quality of justice. Benchmarking judicial reforms and ICT projects against their impact on the three key judicial values—while considering access a fundamental prerequisite—is easier than assessing the impact of every transformation of the judicial system on the *quality* of justice, to know whether the impacts are balanced across the different dimensions, and, ultimately, to assess the nature of the transformations the adoption of judicial technologies fosters.

The key judicial values describe fundamental pillars of the judicial system and are interdependent. The three principles, plus access, deliver effective judicial outcomes only if they are supported by an enabling institutional environment and preexisting technological architectures.

1.5 The Technological Landscape: An Overview

E-government components deployed or envisaged by national e-government frameworks can also be core components of e-justice systems and can shape their impacts on the judicial values. Typical core components include digital identity, e-document, e-signature, and e-delivery, all of which are standards that facilitate interoperability among different e-justice and e-government systems. For example, courts or PPOs can benefit from systems that comply with these standards by reducing the cost and complexity at the design and development stages.

ICTs support all operational areas in the justice domain: from filing to disposition, from case registration to managerial control, and from the drafting to the exchange of procedural documents. To simplify the analysis of the various ICT solutions that support judicial procedures, the white paper classifies e-justice technologies in the following three major clusters:

- CMS and judicial support systems
- E-filing and electronic exchange of procedural documents
- Criminal justice interoperability platforms

This classification is a practical representation of the complex technological landscape of the judiciary. It identifies the functions the different technological applications perform or support and considers the key technological, legal, organizational, and institutional factors that shape the deployment and adoption of the different e-justice systems. Furthermore, it allows to assess the potential impact of the e-justice systems on the key judicial values identified above: legality, economy, legitimacy and access. Figure 1 portrays this landscape.

The following sections will provide an initial overview of the main e-justice technological systems that will be fully discussed in section 1.7. The technological landscape can be analyzed as composed

FIGURE 1. The Technological Landscape: E-justice Users vis-à-vis Types of Technology

Users	Back-office technologies	Front-office technologies Systems interoperability	
Court managers	Management info systems		
Clerical staff	Case management systems	E-filing	Criminal justice interoperability platforms
Judges	Judicial Support systems		
Lawyers	Legal practice support systems		
Prosecutors	Prosecutorial support systems		
Criminal justice agencies			

Source: Authors' elaboration.

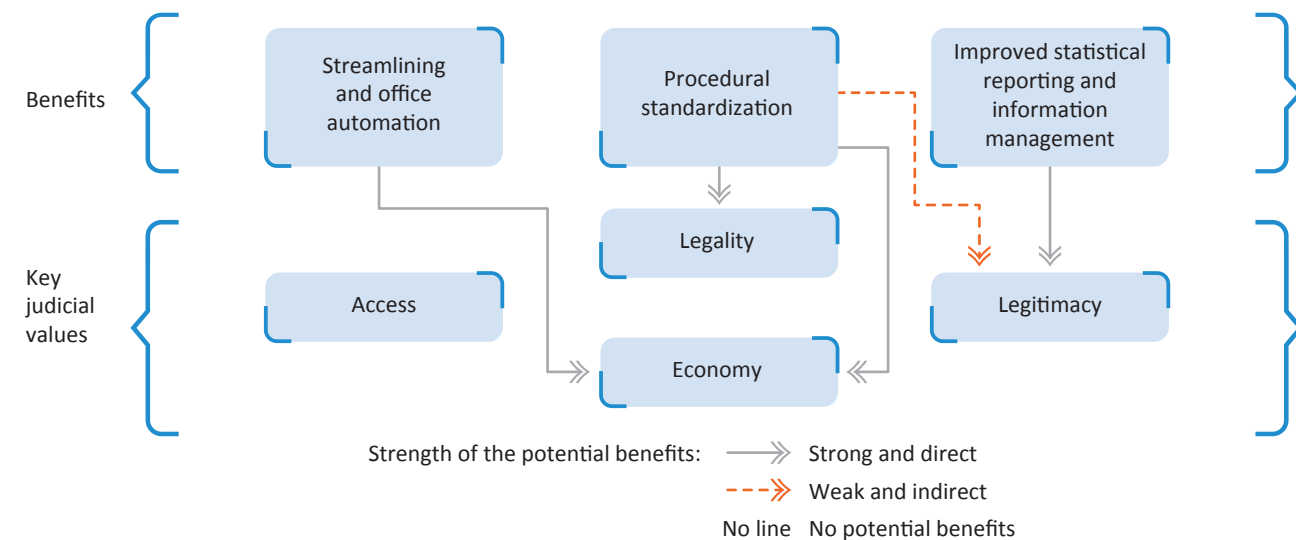
Note: Lawyers' systems and criminal justice agencies are not discussed herein.

by two technological domains: **back-office** and **front-office** technologies (Figure 1). CMSs, as well as judicial and prosecutorial support systems (J/PSS), constitute the back-office technologies, that is, applications that digitize administrative tasks that do not involve interaction with citizens and lawyers. These applications consist of case registration, document drafting, and case and procedural management. The design and management of these technologies take place within judicial offices and do not involve meaningful negotiations with the external actors. Front-office technologies consist of e-filing, public access systems, and the interoperability platform of criminal justice. E-filing and public access systems are interfaces that facilitate interaction between the court and all those who are involved in civil proceedings. The interoperability platforms of criminal justice are the digital infrastructures that allow the exchange of procedural data and documents among all the institutional actors involved in criminal proceedings, as well as administrative bodies such as police or tax agencies. Front-office technologies build on back-office technologies and fully exploit their potential.

Case Tracking Systems, Case Management Systems, and Judicial Support systems

CMSs are applications adopted by courts and PPOs to support the administrative tasks of judicial offices, such as case and procedural document registration and monitoring of case scheduling. Standard CMSs support the collection of case data and their use to populate standard documents (office automation). More advanced systems also offer procedural guidance, deadline monitoring, and the use of case-related data for managerial purposes. The distinction between standard and more advanced systems is commonly made labeling as case tracking systems (CTSs) those that perform basic data collection, and CMSs those with a broader set of functionalities. Clerks and administrative staff in courts and PPOs are the most frequent users of these systems.

Judges and prosecutors rely on different systems to improve the performance of their tasks. They access the data collected in the databases of CMSs (see Figure 1) to inform and better support their work. Judges and prosecutors study and draft procedural documents relying on police reports,

FIGURE 2. Case Management Systems and Key Judicial Values

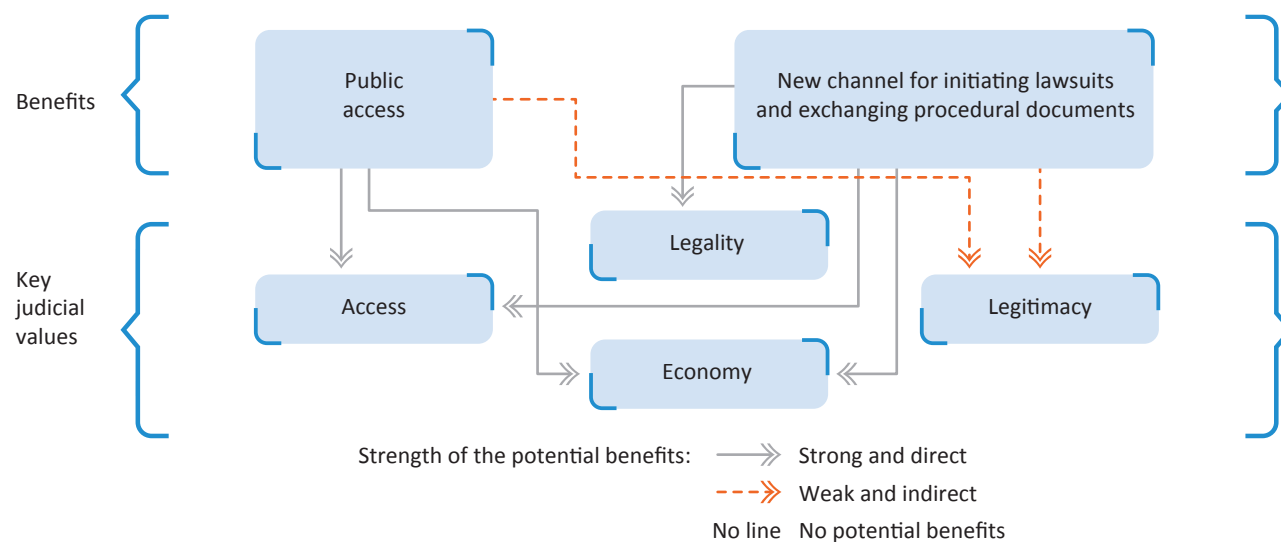
Source: Authors' elaboration.

lawyers' briefs, court reports, judicial decisions, and data collected in CMSs. Therefore, they need efficient and effective access to case law, legal sources, and case-related data and documents. Moreover, JPSS, which are more complex and less standardized technological solutions, facilitate and support judges' tasks. These solutions support and sometimes partially automate the complex process of framing judicial and prosecutorial decisions. As judges and prosecutors enjoy personal, organizational, and institutional independence, it is difficult to standardize the functionalities of JPSS, and the deployment of these systems is very difficult and challenging.

When CMSs are designed and deployed, the code of procedure and the working practices are encoded into software programs that streamline and guide the action of clerks and administrative staff. Similarly, JPSS encode the work of judges and prosecutors. These systems have direct positive impacts on key judicial values. CMSs and JPSS improve procedural standardization, spawning direct and positive impacts on legal compliance and hence legality: similar cases are treated alike from a procedural perspective. In addition, the adoption of these technologies streamlines administrative and judicial activities, reduces procedural exceptions, and improves the economy of the justice system (efficiency and timeliness of case disposal). Finally, the adoption of well-designed CMSs and JPSS enables the collection of detailed and accurate data, which are essential for statistical reporting. This may increase the transparency, accountability, and legitimacy of judicial institutions. At the same time, since CMSs are back-office technologies, they do not directly impact access to justice (Figure 2).

e-Filing and Electronic Exchange of Procedural Documents

While a CMS provides the fundamental dataset of court proceedings, e-filing and other systems used to exchange procedural documents electronically provide the front-office technologies for civil

FIGURE 3. E-filing and Key Judicial Values

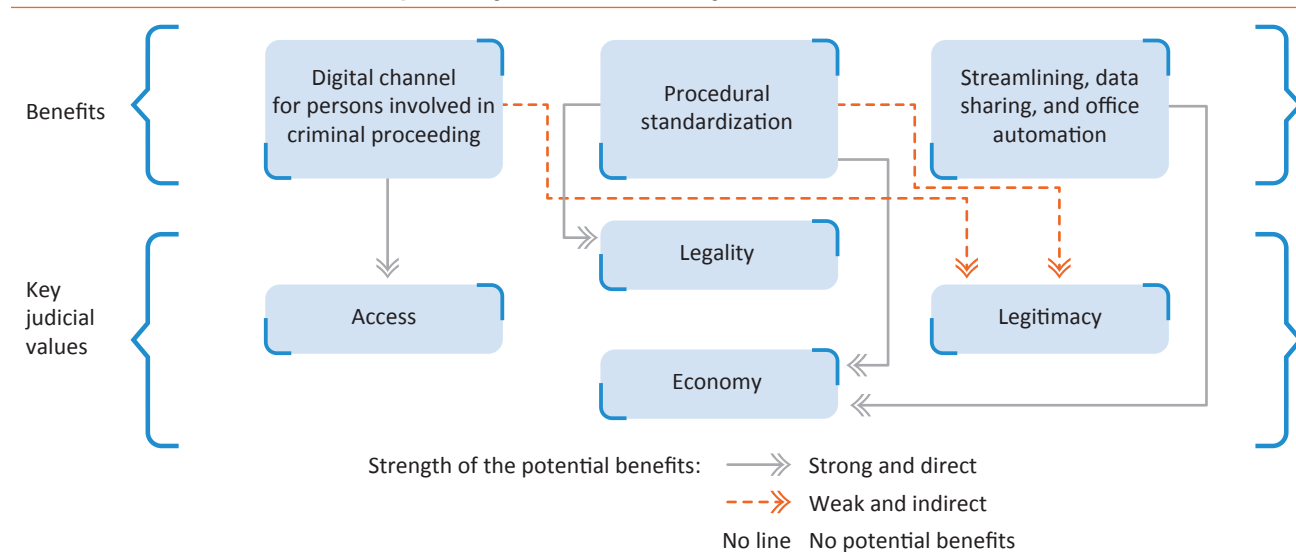
Source: Authors' elaboration.

lawsuits. These technologies support the exchange of the data and the documents created and stored in CMS in the course of judicial proceedings. The most common technologies that support the exchange of data and documents in the course of judicial proceedings include e-filing (i.e., the lodging of procedural documents), e-delivery of deeds, e-summoning, e-payment of court fees, and all other solutions that entail the establishment of electronic channels of communications between courts, lawyers, and citizens in civil lawsuits. The deployment of such solutions is complex and challenging, since they require organization and procedural compliance that is difficult to achieve. This is because they involve players external to the judicial system, such as lawyers, court users, and expert witnesses. From a design perspective, the deployment of these technologies is demanding, since they require technological infrastructure to enable the secure electronic exchange of case-related data and documents.

These technologies increase the efficiency and legal certainty of the exchange of data and documents that are digitally native or digitized. E-filing facilitates access to justice by establishing a new digital channel to initiate a lawsuit and exchange procedural documents. Systems for the electronic exchange of procedural documents increase the legal compliance of the process and reduce the time and cost of the overall proceeding. Furthermore, e-filing requires standards for the documents that can be exchanged, which further increases procedural standardization (Figure 3).

Criminal Justice Interoperability Platforms

These platforms provide a set of tools that is very similar to the one e-filing and the exchange of procedural data and documents offer. However, they allow electronic exchange between the various bodies that are engaged in the criminal justice chain, particularly PPOs and courts, but also police, prisons, and different law enforcement agencies.

FIGURE 4. Criminal Justice Interoperability Platforms and Key Judicial Values

Source: Authors' elaboration.

Given the complexity of these systems and the high level of interoperability they require, these solutions face challenges associated with their design and development. The changes that are needed to effectively exploit the potential these technologies offer require the collaboration of independent agencies with different priorities and interests, and quite often to build interoperable systems that rely on incompatible technological standards. The judiciary is not necessarily in control of the development and change processes. It is only one of the several institutional actors involved. Given this complexity, the relevant advantages these systems may provide to the overall judiciary are not yet achieved in many countries. However, the potential effects of criminal justice interoperability can be single out. The impact is similar to that provided by CMS and J/PSS but on a larger scale. It involves the standardization of the flow of data and procedural documents across criminal justice agencies (primarily PPOs and courts) with positive impacts on procedural standardization and hence on the legality and economy of the proceedings. Also, access is eased if an electronic channel is created that provides information on case-related data and documents on the persons involved in the criminal proceedings (Figure 4).



1.6 The Organizational Landscape: Case Management Policies

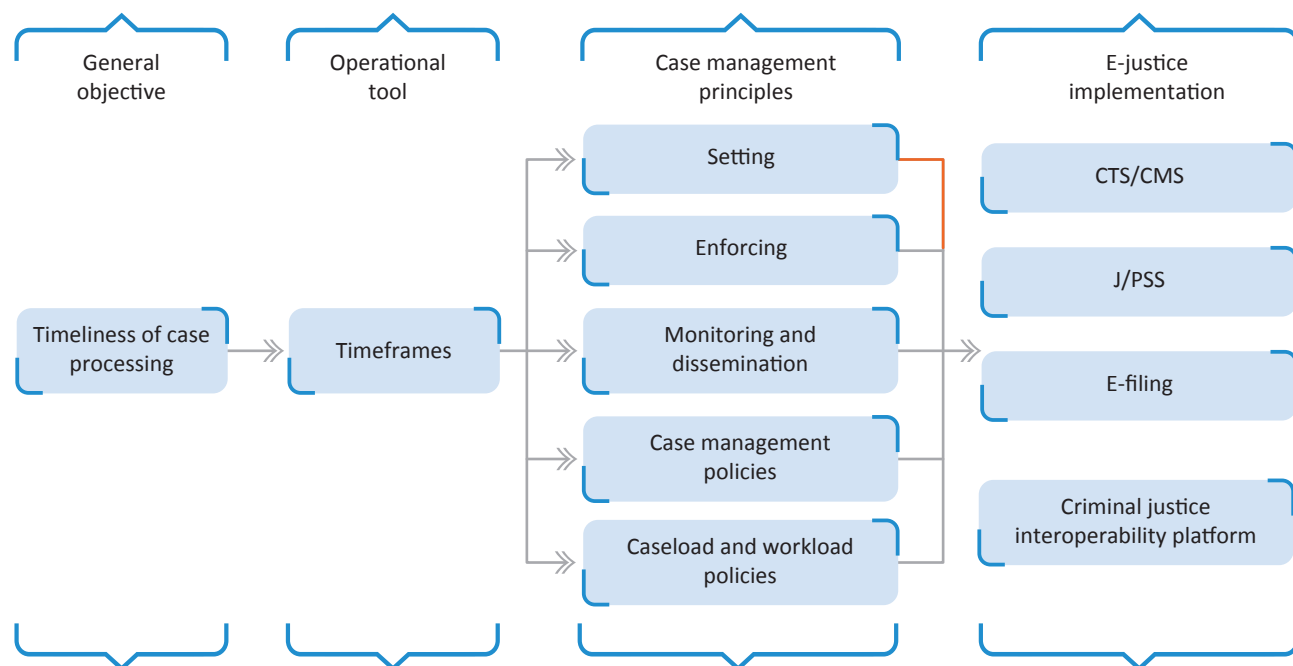
The core goals of every process of digitization of the judiciary are to rationalize, strengthen, and increase the legal compliance with the case management proceedings. A digital system that replicates the preexisting case management proceedings may not deliver the expected results. Effective development of court technology requires organizational and procedural changes. Therefore, e-justice development must be coupled with sound case management policies. These policies govern judicial procedures and, hence, define how different judicial values are met and delivered.

Case management policies determine the processes by which courts and judges handle cases and, hence, their legality, economy, legitimacy, and access performances. Case management policies are a well-structured set of rules to support the effective management of judicial procedures. They identify a set of practices designed to strictly monitor each individual proceeding, prompt administrative or judicial action when needed and encourage alternative dispute resolution in the early stages of the proceedings. The policies, originally developed in the United States and subsequently successfully adopted in other countries, emphasize the active role of judges, prosecutors, and court staff in managing the flow of judicial proceedings.

Steelman et al. (2000) describe the complexity and importance of case management as “the entire set of actions that a court takes to monitor and control the progress of cases, from initiation through trial or other initial disposition to the completion of all post-disposition court work, to make sure that justice is done promptly (p. IX).” Since case management covers most of the actions that concern the initiation, progression, and closure of a judicial proceeding, the policies and rules that govern it can be depicted as the fundamental backbone of the judiciary. Case management policies are the instruments that frame the institutional mission of resolving disputes with fair process and in due time. In order to be active, judges, prosecutors, and staff must have the right information at the right time; thus, implementation of case management policies requires accurate data collected by CMS. However, accurate data collection requires clear case management policies. These policies and CMS reinforce each other.

The Commission for the Efficiency of Justice of the Council of Europe (CEPEJ) (2006) identifies case management as a fundamental pillar for the effective management of procedural timeframes. It outlines the following case management policies to be implemented to ensure a timely definition of court proceedings (Figure 5):

1. Set realistic and measurable timeframes: In consultation with all stakeholders, realistic timeframes should be set for key procedures for the justice system, the court, and individual judges.
2. Enforce timeframes: A notification system should inform managers and judges when pending cases pass the deadline. External pressures need to be established with a view to ensuring compliance by stakeholders. Compliance with timeframes should be understood as a shared responsibility by all actors in the judicial action. Strong commitment and leadership promoting compliance with timeframes at the court level, and a clear distinction and integration of organizational functions between heads of courts and court managers are essential.
3. Monitor and disseminate data: The court or PPO information systems should provide a valuable framework to collect the data necessary to monitor the overall court performance, with a focus on “standstill” times due to inactivity of the parties and/or the courts.
4. Procedural case management policies: A CMS should define clear policies to frame the procedures and coordinate the activities among the multiple actors in the judicial proceeding. By monitoring the effective impact of the framework of existing policies, the case management system detects recurrent sources of procedural delays, and designs and implements the changes in the need of case management policies to overtake the identified bottlenecks. This will help enhance the active case management role of the judge, impose strict limitations on adjournments, encourage early meetings of the parties with a view to facilitating amicable settlements or preparing cases for trial, and it will enable differentiated case management, in accordance with the complexity of the cases.

FIGURE 5. From Fair Trial with Reasonable Time to Case Management Policies

Source: Authors' elaboration based on CEPEJ (2006).

5. Caseload and workload policies: A case management provides a range of tools to forecast and monitor the caseload and workload capacity of the courts. It also helps identifying initiatives which encourage alternative dispute resolution and an early settlement between the parties, to set up filtering and deflective tools to limit the number of cases to be led in courts (diversion techniques), and to increase the use of a single judge instead of a panel.

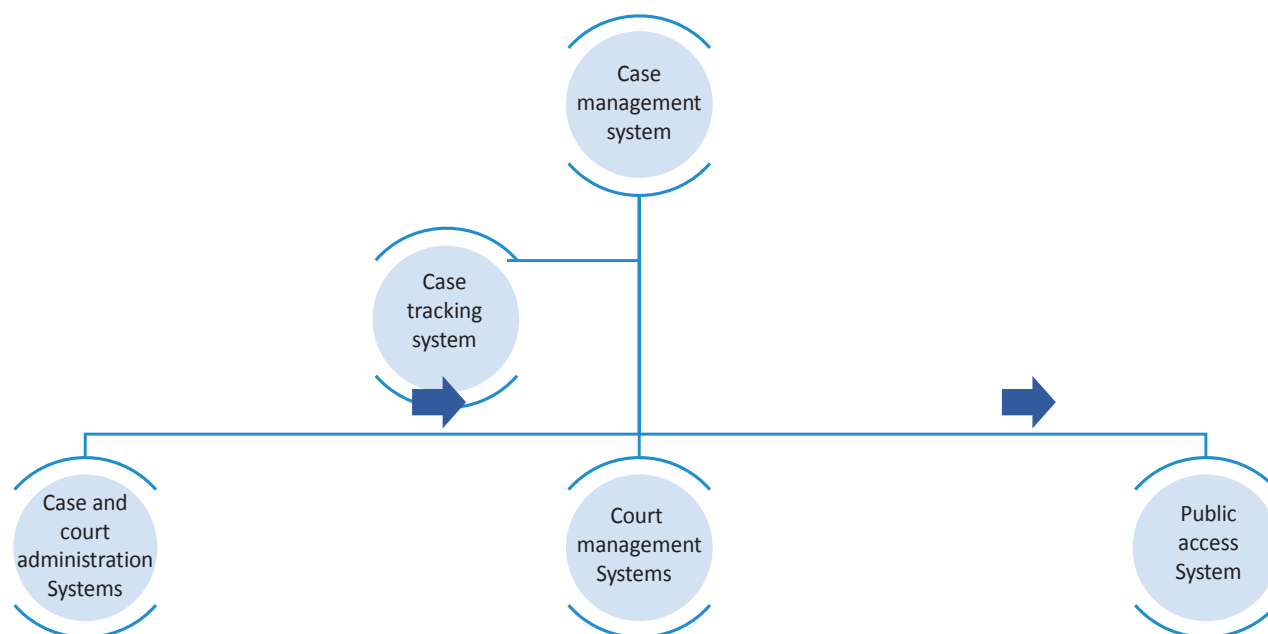
These fundamental policies are needed to enforce and support the effective and efficient judicial proceedings, and to guarantee that the proper management of files and procedures within the court administration is performed. Hence, the design of CMS should keep in stark focus how to inscribe such policies into the technological applications. The design of ICT-based CMSs will rationalize and strengthen case management policies (i.e., the rules to handle judicial procedures effectively). Hence, case management policies define the core specifications of e-justice systems.



1.7 E-justice Technologies

Case Management and Tracking Systems

To understand the role and impacts of digital CMSs on the overall transformation of the judiciary, it is relevant to shed light on the actual role of case management in courts and PPOs. Case management policies are the core drivers of effective management of judicial procedures. Robust CMSs,

FIGURE 6. Case Management Systems

Source: Authors' elaboration.

which are designed to enforce case management policies, can be effective in enforcing key judicial values that case management policies encompass.

CMSs are the advanced systems of electronic registration, guidance, control, and management of lawsuits. They are used to facilitate, coordinate, and guide case processing and the management of courts. A key component of every CMS is the case tracking system. CTSs are the backbone of every CMS, as they collect and produce the basic information which is needed to develop an effective CMS. Figure 6 provides a summary of CMS services and of their functional interdependencies.

Case Tracking Systems

In many countries, case tracking technologies are the first technologies that courts and PPOs adopt. Case tracking systems digitize the preexisting court registers smoothing the production and handling of case data. They offer a digital version of the paper registers that chronologically record essential data about court actions and receipts of case-related documents filed by case parties or drafted by the court (USAID, 2001). These registries also play an important legal role. They collect the required data to control and certify that every single case has followed the right procedure (Vismann, 2008). Figure 7 depicts a classical case register and a typical data structure of a case tracking application. The adoption of case tracking systems and the digitation of court registers usually improve control over cases flow and facilitate the work of administrative staff to enter data from multiple working stations. The systems also decouple the functions of data entry and data search. For the purpose of this white paper, case tracking systems are the basis upon which more efficient systems can be

FIGURE 7. Case Register

Case Title: Jones v Smith	
Case Number: Civ-98-666	
Plaintiffs (s)	Address/Phone Number
_____	_____
_____	_____
Defendant(s)	Address/Phone Number
_____	_____
_____	_____
Attorneys:	
Plaintiff	Defendants
_____	_____

Case Actions	
Date	Action
_____	Initial filing
_____	Return of Service
_____	Responsive Pleading

Judicial Actions		
Judgments and Orders	Judge	Date
_____	_____	_____
_____	_____	_____

Source: USAID (2001).

built. They provide functions that are essential components of CMS. However, case tracking systems are relevant per se since they represent the simplest technological element to be considered digitizing court procedures. For this precise reason, case tracking systems are also analyzed in the Toolkit as separate system even if they are a key component of Case management systems.

Case Management Systems: Background

Effective CMSs encompass the case management policies that drive a judicial system. Since the effectiveness of case management depends on contextual factors (i.e., specific case management policies), the design of effective CMSs requires data collection, monitoring, reporting, warning, and ad hoc control mechanisms (CEPEJ, 2006; Economides Haug, and McIntyre, 2014; Steelman, Goerdts and McMillan, 2000). This enables CMS to deliver the values the driving case management policies prescribe. These prescriptions and the means and the medium supporting their implementation are logically independent. They can work with paper-based systems (i.e., paper dockets, cards, and whiteboards) as well as with ICT-based applications. The implementation of ICT-based CMS facilitates the application of case management policies, increasing procedural standardization and mechanisms of process enforcement. However, the enforcement of the case management policies only occurs if the design of the technical system properly encompasses these policies.

In every court, the responsibility of the administrative personnel is to keep track of the different stages of the proceedings, their status, requests of the parties, and hearing dates, and to manage the personal data of the parties involved in each case. An effective CMS provides the framework to perform all these tasks properly.

Case Management Systems: Functions

CMSs are applications that provide a large set of functions. These systems support courts' administrative personnel to keep track of the different stages of the proceedings (e.g., status of proceedings, requests of the parties to the judge, and hearing dates) and manage the personal data of people involved in a case, up to the final decision of the judge. The systems replace paper registries (books or dockets) and support the certification that every single case has followed the right procedure, as the system indicates. Moreover, they replace the workflow and division of tasks that are traditionally structured and organized by paper dockets. CMSs specify the offices in charge of handling specific registries and tasks. In addition, since CMSs are connected by networks, it is possible to access or to read data from many different locations and workstations. They provide more detailed statistical reporting, simplifying and automating access to rich data sets. Also, they offer an office automation solution that automatically populates forms using the data stored in shared databases. Finally, they provide procedural guidance to clerks and, in the best cases, the enforcement all the case management policies specific for the context.

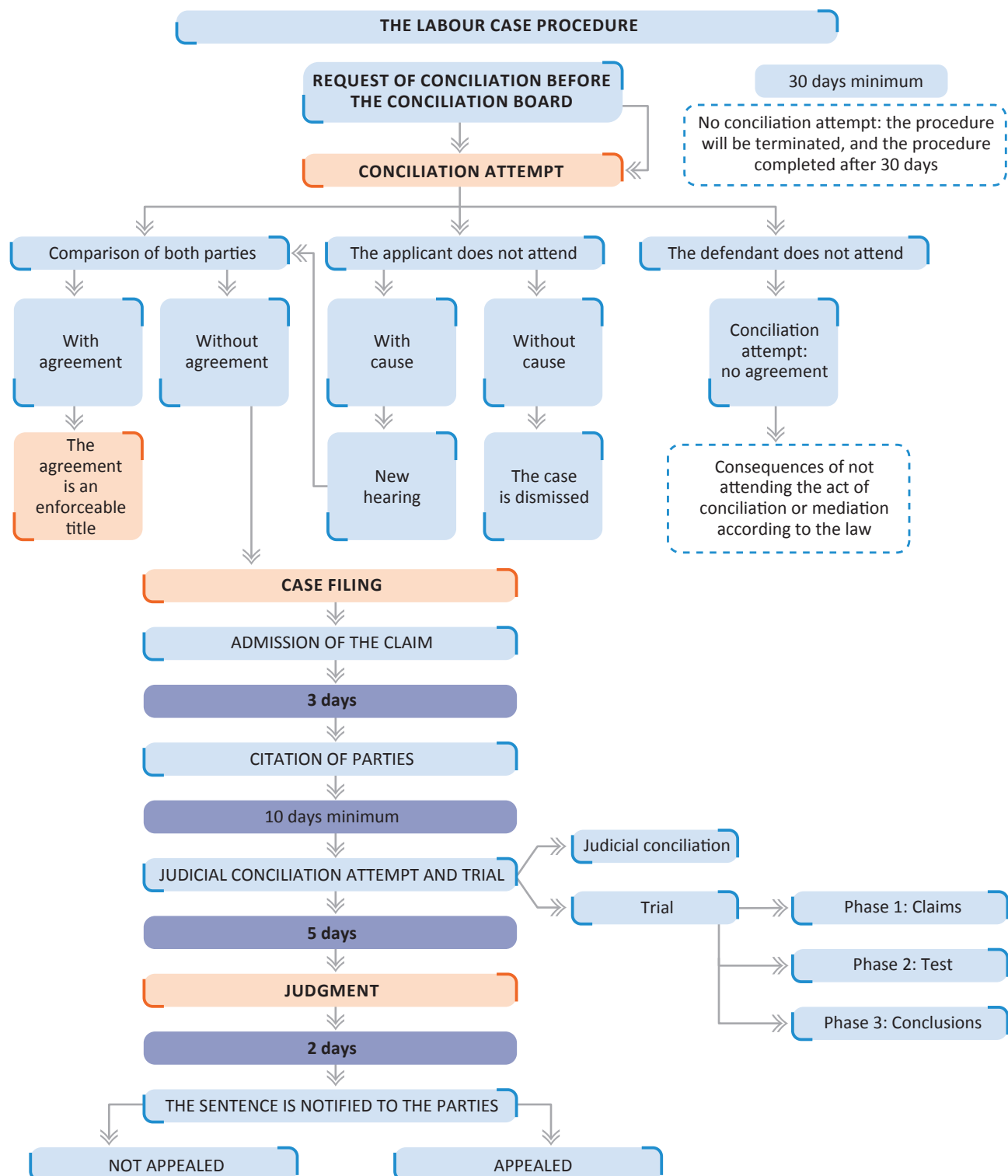
CMSs are the foundation of the technological systems of courts and prosecutors' offices (Fabri, 2001); they represent the building block that enables the development of most of the other technological systems that are integrated or developed in the judiciary to provide public access (see Section 1.7.3). They are also a prerequisite of e-filing and criminal justice interoperability platforms (see Section 1.7.4). All these systems are designed to support and/or automate the complex and cumbersome set of tasks which are associated with case handling, ideally from filing to disposition. Figure 8 depicts a flowchart of a legal proceeding in Spain. It shows that even a simple legal proceeding includes multiple steps, procedural options, different types of procedural documents associated with each step, internal deadlines, and summons that must be handled and considered.

Case Registration

Typical CMS enable the registration of data for each judicial case, with a dataset that is much richer and much more valuable for managerial purposes than those offered by case tracking systems. Indeed, as digital replicas of paper-based registries, case tracking systems do not add value to the dataset available to judicial officers. CMSs instead register a much richer data set. For instance, CMSs may record every procedural event, time limits for every action or event, the subjects involved, and other information. Since the data recorded in a CMS are more relevant for case and court management, they increase the importance of data accuracy.

Case Handling

With more accurate and reliable data, problems can more easily be identified, and solutions developed to handle cases properly. CMSs foster better monitoring and enforcement of deadlines (e.g., the end of custody period, the time for filing an intermediate application, and the three days for summoning parties in the Spanish example of Figure 8) and timeframes to guarantee the prompt

FIGURE 8. Labor Case Procedure in Spain: Actions, Procedural Documents, and Deadlines

Source: Proceso Laboral Ordinario (2019).
 Note: Translated from Spanish by the authors.

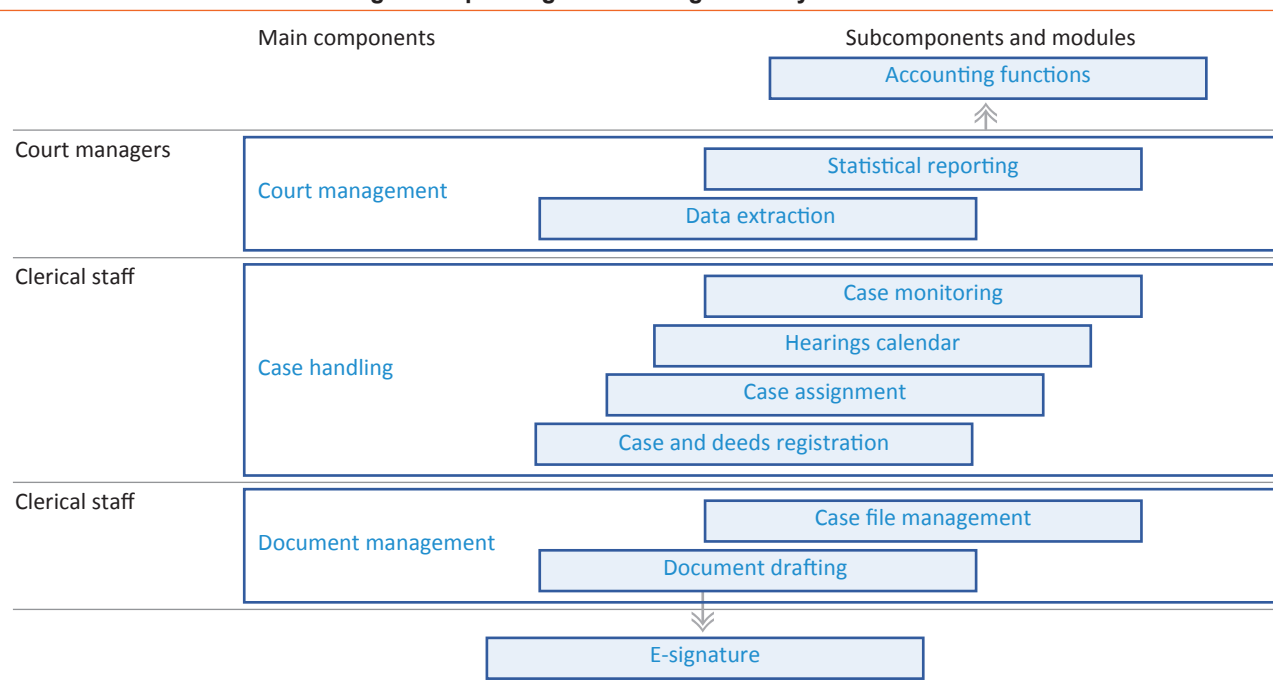
handling of cases. Consequently, they provide guidance to those working with the systems and enforce case management policies as well as legal and procedural prescriptions (case monitoring). Such enforcement must be consistent with the legal requirements and with the practices a given court or PPO adopts. The data gathered by the system can be used for statistical reporting, court management, and collecting key performance indicators (KPI – see court management functions below). Usually, two additional modules support the handling of cases: random case assignment and the hearing calendar.

Random case assignment is a system based on preestablished criteria and a random selection that automatically assigns new cases to individual judges. Random case assignment is a good practice to avoid undue influences in judicial proceedings and implement the principle of legal or natural justice.

Hearing calendar systems provide tools to facilitate the listing of the cases that must be heard in a given hearing session. Such systems help to keep the hearing calendar well balanced, avoiding the common problem of having hearing sessions with too many or too few cases. As Figure 9 depicts, CMSs can integrate many different functions, and can support different levels and degrees of procedural digitization, if the systems are designed following a modular architecture.

The data collected in CMSs are the primary data repository of the courts and PPOs. They can be used for various purposes. CMSs offer functions to support court management and public access.

FIGURE 9. Back-office Technologies: Unpacking Case Management Systems



Source: Authors' elaboration.

Document Management

Court clerks and administrative officers of PPOs draft several types of procedural documents, such as summons, hearing records, and a variety of papers that the national regulations entrust to them. Well-developed CMSs support this function through document drafting modules. Such modules contain templates and electronic forms to ease document writing. The data collected in the CMS can be automatically uploaded onto the templates, to accelerate and improve the accuracy of the produced documents. In some cases, users can adapt the templates for specific purposes. Once document-drafting modules are in place, it is useful to have electronic case file management, a document repository that allows the collection of the procedural documents in electronic format.

If e-filing and criminal justice interoperability systems are not in place, documents prepared with these tools are printed and served by traditional means. Even if the concurrent use of electronic and paper documents is a duplication of activities, it is a stage that builds required skills and routines for the successful development of e-filing and criminal justice interoperability platforms.

Court Management

Courts are complex organizations. The handling of cases requires many managerial tasks, such as budget and resource allocation, caseload forecast and assessment, workload monitoring, and identification and measurement of quality standards. The data collected by the CMS is essential but not sufficient to support all these functions. CMS should provide all the required data to have detailed knowledge of the case flow inside the court (i.e., incoming, outgoing, pending per each type of case, court unit or office and, to some extent, employees), to identify standstill times, to use for KPI monitoring, and to track appeal and reversal rates. To meet these goals, proper statistical and managerial interfaces should be designed.

However, it is vitally important that the initial design of the CMS considers the court management functions and the data needed to support court managers' tasks so that the CMS can provide all the key support functions and data to users. This means that CMSs should be equipped with two modules allowing data extraction, based on standard or ad hoc queries, and statistical reporting. Court management also benefits from other systems, such as accounting, human resource management, and financial management systems, which are standard applications to allocate and monitor the use of resources within judicial offices.

Case Management Systems: Critical Issues

From Design to Implementation

It is not easy to develop and maintain a dataset and a workflow system encompassing all the actions and events. To support all the needed tasks and procedures, CMSs require as bundle of hardware and software configurations that are costly and complex to design and maintain. However, while CMSs build on an articulated technological infrastructure to be effective, they need to be supported by the right enabling environment. The transformations that CMS bring about concern adopting new rules and work processes as well as transforming the culture and institutional environment of the judiciary.

For example, CMSs offer valuable support to courts' control over judicial proceedings. Continuous court control and, more generally, case management policies are facilitated and supported when

an effective case information management system is in place and when the CMS facilitates the coordination of activities between judges and courts' administrative key staff. The technological architecture can provide the needed scaffolding to design an effective work and information flow. However, an effective CMS that provides detailed information on the status of each case, including deadlines imposed by the court and litigants' compliance with deadlines, needs to be accompanied by specific organizational and institutional transformations. Qualified staff is needed to assist the judge in the case administration and monitoring process, allowing judges to focus on their judicial functions. Moreover, the work and information flow, which is designed into the technology, requires judicial commitment to proactive case flow management and to establish time limits within which cases will be adjudicated. It entails organizational and institutional arrangements to support court control over the pace of litigation and, hence, the minimization of adjournments. It is also important to have mechanisms to determine the trial date certain and establish performance measurement systems to be used to evaluate the outcome of every activity and procedure. Given the complexity, the design and implementation of CMS are challenging and controversial in their outcomes. However, the work of clerks is largely administrative, and can be represented as sequences of operations consistent with the legal frameworks and with little individual discretion. Hence, clerks have a low degree of autonomy and discretion, which reduces the complexity of the design and adoption of the CMS.

CMS and Court Reorganization: Front and Back Office

CMSs have many organizational benefits: increased efficiency, collection of more accurate information resulting in improved statistical reporting, and an active role of judicial institutions in managing cases. The distributed and interoperable data access embedded into CMSs often fosters the reorganization of the structure of the court's administrative offices, making it more oriented to the users' needs. Instead of many different units taking care of different paper registries, many courts exploit case tracking and office automation suits to reconfigure the internal organization by using the back-office/front-office configuration. Within this organizational configuration, the front office delivers procedural information, while the back office takes care of all other tasks, without the need to manage the interaction with lawyers and citizens endlessly asking for information. From a user's perspective, this change reduces the need to go to different offices to access data entered in different registries (Contini, 2000). From a court perspective, CMSs free court staff from requests by lawyers and other courts, and limit access to only the courts that really need it. This leads to improved security and allows the back-office staff to work without being interrupted by the requests of court users.

Limited Functions and Dataset

The design and implementation of CMS have certain pitfalls. Too often, CMSs fail to provide useful monitoring of case processing or do not inform prosecutors, judges, and clerks that a specific action is due in a specific instance. Too often CMSs fail to provide the kind of analytical reporting that is needed to manage courts and PPOs. The dataset is often insufficient and reflects just internal outdated requirements, and not the needs of court users or of courts' managerial functions. Moreover, too often CMSs' data are decoupled from human and financial resource management systems, making performance evaluation weak or hard to achieve. In brief, performance evaluation should not be limited to indicators such as cost per case, or cases per judge. A joint assessment

of resources employed and of case-flow statistics is needed to implement advanced management techniques, such as standard cost financing. Therefore, CMSs should be developed in alignment with case management policies and sound court management practices.

Poor Procedural Standardization

When developing CMS, the heterogeneity of procedures affected by digitization is the most common issue to face. Despite the common legal framework, administrative and judicial procedures regularly vary across offices of the same type and sometimes even within the same office. This common state of affairs contributes to organizational complexity and may conflict with technology design principles. Once the system is rolled out, users may experience the mismatch between their own “way” to execute the procedure and the constraints embedded in the system. This may lead to resistance to change. Furthermore, such heterogeneity contributes many functional requirements to the design process which are expensive to implement and used by a small number of offices.

Improving Data Consistency

The poor quality of the data entered in CMSs (outdated, incomplete, incorrect, and unreliable) is another common issue. To tackle this problem, CMSs often provide ad hoc functions to improve the quality (reliability) of the data collected. However, many case tracking systems do not have functions to guide or standardize data entry to guarantee reliability. Hence, quite frequently, the quality of the data is poor, with data missing attributes or be inconsistent. Data such as the type of crime (or charge) or the subject matter in civil proceedings are often so inconsistent as to make their collection useless. To avoid this situation, many CMSs include tools to guide data entry. Such guidance varies from data to be entered on mandatory databases (or the procedure remains blocked), preestablished data lists (e.g., those with the subject matters or with possible charges to choose from), various controls on data consistency, and the possibility to upload data from other databases (e.g., personal registry and tax agency databases). While these solutions improve the accuracy of the dataset, the combination of these functions increases the rigidity of the system, so that users tend to perceive them as unfriendly. However, the progressive introduction of controls and guidance in data entry are becoming increasingly common choices in CMSs.

Tyranny of the Installed Database

Several judiciaries are still using very old CMSs that collect huge amounts of data that should migrate to the new system. This apparently standard technical exercise results, for a number of reasons, in a difficult or very expensive exercise. To avoid this problem, in some countries, project leaders decided not to migrate the data but rather to go ahead with two CMS: one for the old cases and one for the new. This apparently irrational decision qualifies the difficulties associated with this challenge.

By the same token, in some countries courts of the same type use different CMSs (e.g., France and Spain) (Trassard, 2007). This further increases the complexity and the costs of moving to nationwide CMS. Overcoming this hurdle can imply the integration of judicial systems or the need to select just one system for deployment at the national level, as in Australia, Germany, or Spain.

Project Governance

Governance of CMS digitization projects involves the institution in charge of ICT development (ministry, supreme court, or general public prosecutor office) and, as users, the administrative staff working in the courts or PPOs. Judges or prosecutors are not involved. However, CMS digitization projects require changes at organizational level, training, and sometimes improved office facilities. Thus, the institution in charge of ICT development must collaborate with those partners needed to provide the change management and training services needed by the project. Public bodies or private organizations contracted for the project can provide these services. Often, regulatory changes are required to simplify the development or implementation of the systems. Indeed, some rules that are meaningful in the paper-based domain are meaningless (or outdated) in the digital domain. Therefore, the legislative office of the institution in charge of the project should be involved from the project's inception.

Case Management Systems and their Impact on Judicial Values

Properly designed and implemented CMSs fully support the multiple activities required to enable an effective management of the proceedings. They also foster smoother, more effective execution and coordination of all the necessary tasks to organize courts and prosecutorial functions. If the information about cases is properly recorded and maintained, it will be easier and more effective to schedule hearings, monitor claims progressions, and coordinate the parties who are involved in the proceedings. The administrative operations are streamlined, leading to increased productivity. Moreover, digitizing the procedures enforces procedural standardization and compliance with procedural laws. More accurate and reliable monitoring of the phases of a procedure increases accountability and transparency of judicial activities. Standardized practices also favor the use of automated procedures that result in fewer exceptions to be managed and substantial cost saving. Overall, effective CMSs increase the efficiency of judicial services, provide a more uniform service to individuals and businesses seeking justice, and deliver a judicial decision within the expected timeframe. This leads to direct positive impacts on judicial values, specifically: economy, legality, and legitimacy.

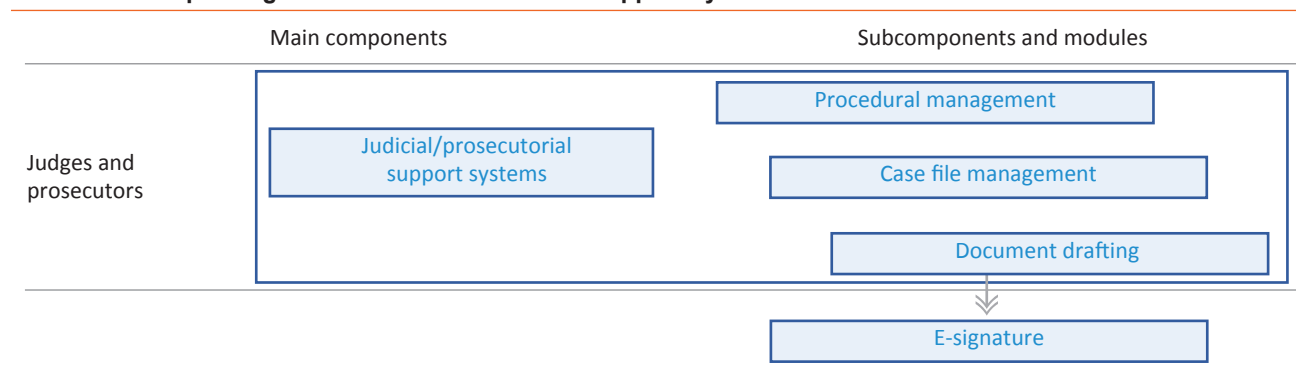
Judicial Support Systems

Judicial Support Systems: Background

Judicial support systems are extensions of the CMS, designed to digitize and support judicial and prosecutorial tasks. They support the writing of judicial documents through preestablished electronic forms, populated by data which are automatically uploaded by the CMS. In addition, they offer a rich set of managerial functions and precise procedural guidance. From a functional perspective, judicial support systems can be easily understood as CMS customized to the needs of judges and prosecutors.

Judicial Support Systems: Functions

Through these systems, the data collected by CMS, such as names and personal data of the parties or the electronic versions of procedural documents are made available to the judge (or prosecutors) and used to write procedural documents (document drafting module). Sentences and other case-related documents are saved in electronic folders (case file management). In addition, these tools provide judges and law clerks the opportunity to browse case law, draft thematic glossaries to speed up the

FIGURE 10. Unpacking Judicial and Prosecutorial Support Systems

Source: Authors' elaboration.

writing, and publish decisions on the court's website. In this case, technology supports or automates the production and archiving of procedural documents, but not their electronic exchange. The strong organizational and technological integration resulting from the adoption of these systems can greatly increase the effectiveness and the efficiency of the justice system (Figure 10).

Furthermore, thanks to the procedural management module, many judicial support systems structure the workflows with sequences of actions, deadlines, a broad range of functions, and information useful for the timely management of judicial proceedings. In this case, the procedures established by the procedural code are inscribed into the judicial support system. The system can have warnings to signal procedural deadlines or custody time limits established by law, and it can identify missing actions (e.g., filing of a mandatory brief) that are required by law and deadlines to publish a sentence. Case management policies should be inscribed into judicial support systems. Judicial support systems support the preparation of electronic documents that can eventually be exchanged electronically (Figure 11).

Furthermore, judicial support systems require a higher level of standardization of data and procedures, resulting in a profound coupling between the legal code (procedural rules) and the software codes designed to enable judicial procedures. Judges, prosecutors, and clerks working with full business CMSs are guided by the rules embedded in the systems, such as mandatory data to be entered to close a specific procedural step, or more sophisticated procedural requirements.

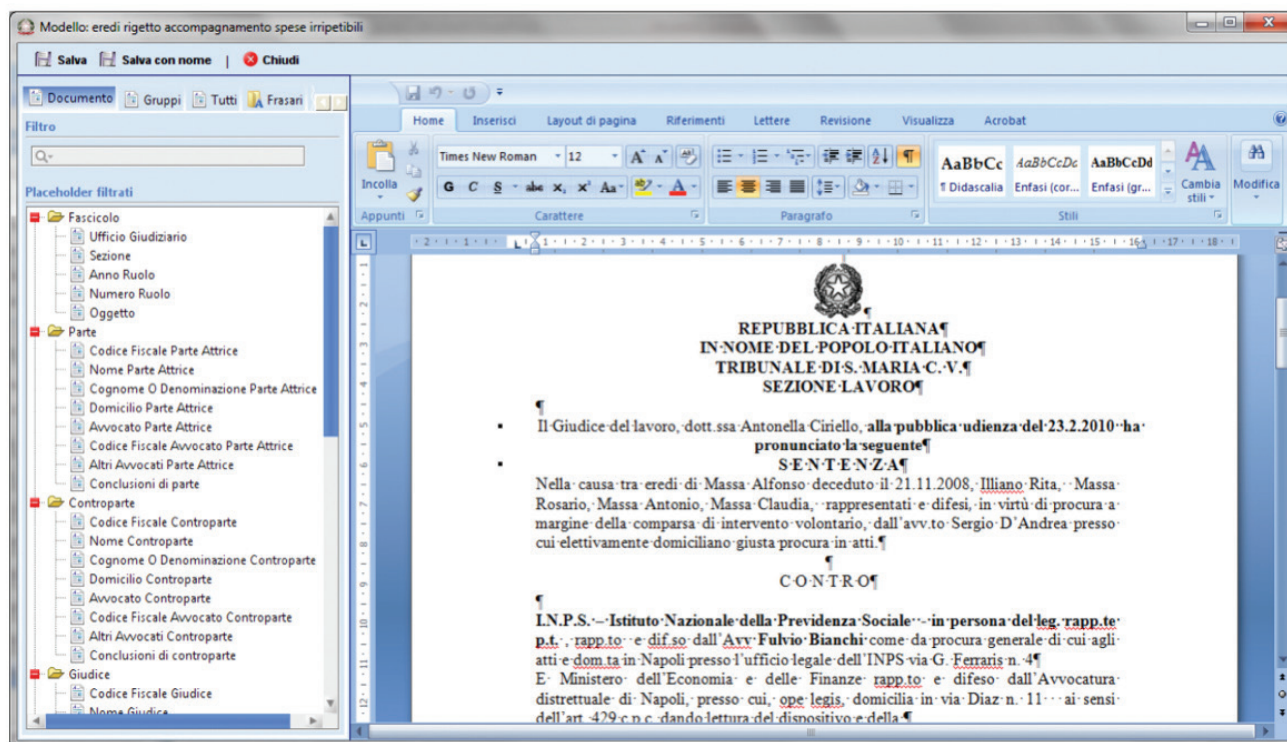
Judicial Support Systems: Critical Issues

The development and effective use of judicial support systems is often problematic. Such systems deliver the expected results only when a large majority of judges and prosecutors agree to use the systems. It may be difficult to achieve this result because it requires finding a balance between the level of standardization demanded by a well-functioning judicial support system and the need to adapt to the specifications required by judges and prosecutors.

ICT Literacy

The ICT literacy of judges and prosecutors, particularly their ability to write judicial documents with a word processor, is the first critical issue to consider. If judges and prosecutors do not possess

FIGURE 11. A Judicial Support System Interface



Source: Corte d'Appello di Milano (2012).

this essential skill, a low adoption rate is very likely. As an alternative, it is common to observe judicial assistants and clerks using the J/PSS instead of judges and prosecutors. However, at least in Europe, this skill and the associated routines are becoming more and more common across judicial officers.

Judicial Independence and Standardization of Procedures and Forms

The second set of critical issues results from the combination of two factors: the professional nature of the tasks affected by digitization and the autonomy of the subjects involved. Judicial (and prosecutorial) support systems are designed to digitize a set of tasks that, to be effectively performed, require experienced professionals and a degree of professional autonomy. To handle a case or lead an investigation, the judge or the prosecutor must have the freedom to decide what to do and how to work (within the boundaries established by the legal framework). In practical terms, this often leads to the rise of distinct working practices and tools, which differ from one professional to another. This dynamic is empowered by the institutional and constitutional independence and autonomy granted to judges and prosecutors. This includes different approaches to the handling of procedures (scheduling of hearings, sequences of the briefs to be exchanged), document management (mixed forms, and case file management practices), and even the features and layout of procedural documents.

Complex Functional Requirements

The complexity also emerges in the design stage, which often includes long lists of functional requirements, sometimes one an alternative to another, sometimes in contradiction with each other. In the development stage, the digitization of such a variegated set of requirements must be rationalized and functionally simplified. This status can be achieved by reducing the variety and the number of requirements observed in the file into a single coherent system. Consequently, the judge or the prosecutor may find that the electronic forms, procedural constraints, and tasks suggested by the J/PSS are not coherent with what they perceive as an actual requirement. The reaction of judicial officers involved in the adoption, often labeled as resistance to change, can be better understood as the consequence of the dynamics just described.

Project Governance

The governance of J/PSS involves different institutional actors such as the ministry, the judicial council, and the supreme court. Each party involved in these projects might have different visions, strategies, and priorities with respect to project aims and goals. Consistency and collaboration in the project vision and drivers among the parties involved is extremely important for the success of the project. Moreover, J/PSS systems require the standardization of procedures and forms (documents) used by courts and PPOs. This standardization can be difficult to achieve since local practices may have developed different document standards within the common legal framework. Hence, a process to facilitate the adoption of common standards and procedures in different courts and PPOs is needed to facilitate the adoption of J/PSS systems. This standardization must consider the need for flexibility in document standards and procedures that some courts or PPOs might have. Users groups that include judges and prosecutors are useful to map different procedures, discuss functional requirements, and find a common solution that balances the needs for standardization and flexibility.

Judicial Support Systems: Effects on Judicial Values

J/PSS systems deliver increased standardization of judicial and prosecutorial routines and work practices. This has several positive impacts on justice and the economy. Adopting the same J/PSS at the court or at national level brings about increased consistency in judicial procedures, forms, and scheduling routines. This contributes to the equal treatment of the case parties. Furthermore, since some actions previously performed by professionals are now executed by machines, the professionals have more time to dedicate to the proper consideration of the legal and factual issues dealt with by cases. This will improve the legal quality of the system.

Furthermore, standardization (together with functional simplification and rationalization) leads to streamlined judicial procedures, fewer procedural exceptions, and the reuse of the data already collected in CMSs. This set of changes improves procedural efficiency by reducing the time required to handle cases, hence improved efficiency.

Once judicial and prosecutorial support systems are fully deployed, the entire set of procedural documents is in digital format. This makes a massive amount of data searchable, which can boost access to judicial information and enable the creation of local jurisprudential repositories. It can also accumulate the big data required to use artificial intelligence to improve the administration of

justice. In such cases, access is improved (albeit limited to judicial information) and legal certainty is improved (enabled by the availability of jurisprudential orientations of each court).

E-filing and Public Access Systems in Civil Proceedings

E-filing and public access systems are desirable improvements of the digitization of back-office functions. They enable an electronic front office to be built, which can provide and exchange procedural data and documents among the many parties who are involved in the proceedings.

Public access systems⁸ entitle court users to access case-related data, but not to exchange data. It is the simplest way to make relevant information available to case parties. Instead, e-filing enables the exchange of data and documents between courts and users (e.g., lawyers, expert witnesses, and case parties). It can be used in all proceedings. However, profound differences occur when e-filing is used for civil or administrative proceedings versus criminal proceedings. In order to account for these differences, the authors will discuss e-filing in two separate sections: in this section, in the context of civil and administrative proceedings; in section 1.7.4, in the context of criminal cases. This distinction is needed to fully account for the specificity of the two contexts and their implications for the design and deployment of e-proceedings. In the case of criminal proceedings, e-filing must deal with interoperability challenges that do not exist in the case of civil and administrative proceedings.

In civil proceedings, e-filing entails the creation of an electronic channel of communication between courts and court users (lawyers, experts, case parties) but not the interoperability between courts and court users' systems. On the contrary, as discussed in section 1.8, the implementation of the criminal justice chain interoperability platforms deploys interoperability among the systems used by the police, prosecutors, courts, and other agencies involved in law enforcement. For these reasons, the challenges from a technical, organizational, and governance perspectives are quite different and need to be discussed separately.

The term e-filing has a broad connotation. In several countries, case parties have the possibility to submit procedural documents by e-mail or other electronic means, including fax. However, this does not necessarily mean that an e-filing system is in place. These electronic means do not account as e-filing systems if these submissions have to be supplemented by the filing of the documents in the original paper form. For the scope of this document, e-filing only refers to fully automated systems that enable the submission of all proceedings files electronically.

E-filing: Background

E-filing systems can be either fully integrated with the CMS or platforms which are completely decoupled from CMSs. In the latter case, CMSs collect procedural data, while the e-filing platform

⁸ Technically, public access systems can be both one of the functionalities of the e-justice platform addressed to ease the access to case-related information to court users, and an autonomous application made interoperable with the CMS.

is the repository of procedural documents. To be effective, an e-filing system must be fully interoperable with the CMS. The filing of a new case must trigger the automatic registration of data into the system to allow court clerks to make the proper checks, before officially recording the case in the court system. Integration between CMS and e-filing systems is also needed to update case records every time that a party files an interim application, a final request or any other case-related document. Similar full integration is needed to allow the court to serve documents to the case parties. Thus, it is proper to look at e-filing platforms as an extension of CMS and judicial support systems. From an architectural perspective, they can be one single system or a series of interoperable ones.

E-filing: Functions

An e-filing platform offers various functions (Contini and Fabri, 2003); essentially, it enables a party to accomplish the following:

- Start a judicial proceeding by issuing and receiving an electronic file.
- Exchange procedural documents (i.e., briefs, interim applications, expert reports, and sentences) among those involved in the proceeding (e-delivery).
- Send and receive notifications and summons electronically (i.e., email, dedicated platforms, or other technologies as registered mail; e-summons).
- Pay court fees online.
- Provide a secure repository of all procedural documents (document management).

Not all of the abovementioned functions are always available on an e-filing platform. For simplicity, the authors will refer to full e-filing systems when all the functions are available, and to partial e-filing systems when the platform provides only a subset of functions. To have a full e-filing system, a set of modules must be in place: the e-delivery system, which allows and certifies the exchange of the procedural documents; the e-summons module, which enables official notifications to be sent and received; the court fee calculation the plaintiff uses to calculate the amount to be paid to file the case; and interoperability with banks or credit cards to pay the fee.

E-filing: The Role of the Plaintiff

To initiate a new case using a full e-filing platform, the plaintiff (i.e., a lawyer or a citizen) must produce an electronic complaint, or e-complaint. The e-complaint can be prepared using dedicated applications which are used by law firms, or a standard word processor. When the document is ready, the plaintiff fills out a form, which is made available by the e-filing system, with essential required data for the filing, pays the court fee online, and submits the case documents electronically. The case documents contain the complaint, proof of payment, power of attorney, and the required data for the submission. The submission can occur via different methods: a justice system portal (or court portal), email, or registered electronic mail (i.e., a specific email system that is managed by “trusted third parties,” and that guarantees transport neutrality and evidence of delivery or receipt).

With the justice system portal, the plaintiff logs in, enters the required data (e.g., type of case and name of the court), and uploads and submits the e-filing package. Once the package is delivered, the evidence of delivery is returned to the plaintiff to guarantee all the legal effects of the filing. Time stamps are added to the filed documents when required by the legislation.

FIGURE 12. Unpacking e-filing

Users	Main components	Subcomponents and modules
Clerical staff	Document management	[see judicial support systems]
	E-filing (court side)	E-delivery
		E-summons
		Public access
	Online-payment	Court fees calculator
		Bank interoperability
Judges	Document management	[see judicial support systems]
Lawyers	Document management	
	E-filing (lawyers side)	
	Online-payment	

Source: Authors' elaboration.

Note: Lawyers' systems are not discussed herein.

If the submission takes place by e-mail, the plaintiff sends it to the e-mail address provided by the court for this purpose. This can be done with ad hoc systems (Figure 12) or with standard email applications. Once the package is received, the same email system, or the court itself, issues and sends back the proof of delivery with the required time stamps. Depending on national procedural legislation, the court or the plaintiff must summon the defendant. This must be sent to the last known address of the defendant. Since in most cases defendants do not have an official electronic address, the first summons must be delivered via classical means (i.e., post or bailiff). Nevertheless, once the defendants have been properly summoned and have declared their own electronic address, all the communications, up to the final decision of the judge, can be delivered electronically. All documents exchanged are uploaded into a secure repository, which is accessible to all case parties. This solution makes the electronic case file robust and eases the identification of the pieces of information that will become evidence in the case. However, ad hoc cybersecurity measures must be in place to safeguard sensitive data stored in the repository.

Online Payments

E-filing systems also provide the platform to calculate and submit online payments. The first step is the development of the court fee calculator. The amount is dictated by national legislation. The authors have identified three options. One is to leave the calculation to the plaintiff. A second option is to embed the algorithm for the calculation in the court portal or in the system, so that the plaintiff enters the required data to estimate the amount to be paid, (e.g., the type and the value of the claim) and the system calculates the amount. In both cases, once the amount is established, the plaintiff pays via Internet banking or credit card. Hence, a module must be in place that grants interoperability with the banking system. The court is responsible for checking to see if the amount

paid is correct and, if not, request that it be paid. The third option is that the court calculates the amount to be paid, based on the data in the e-filing of the case. The amount is then taken from a dedicated bank account of the lawyers who submitted the application.

Making the calculation and the payment online reduces, or even eliminates, corrupt practices, hence improving the integrity of the system. Furthermore, online payments streamline the procedure.

E-summons

Electronic service of procedural documents (e-summons) is another relevant function offered by e-filing systems. E-summons is possible when the recipient has provided an electronic address to the court to use for such purposes.

Electronic service of procedural documents can be done in various ways. A first option is to inform the case parties that a document is available for download in the court's document repository. The information is delivered to the parties via email, SMS, or other electronic means. In this case, the document is not attached for security reasons. To download the document, the case party must log in to the court's portal (after the registration on the court's portal or following electronic identification via various means, such as citizen electronic ID or professional electronic ID). Depending on the legislation, the document is deemed to be served when the recipient opens it in the information system or confirms receipt without opening the document, or after a given period of time has elapsed after the notice of document availability on the system has been delivered. A second option is to deliver the encrypted document via secure email, such as the registered electronic mails (REM). In this case the certified encryption provided the needed security to enable direct exchange of these sensitive documents.

The electronic service of documents can have a positive impact on the functioning of the courts. It delivers documents promptly and inexpensively, saving time and costs. Since incorrect or delayed summons are common reasons for the postponement of hearing in many jurisdictions, e-summons can increase the timeliness and integrity of judicial action. Furthermore, when the system is technically sound, it improves legal certainty in an area critical for the correct unfolding of judicial proceedings.

Electronic Signature: Authentication, Integrity, and Non-repudiation

The electronic signature (e-signature) of documents is common, but not always required. If e-signature is already a standard at the national level, it can solve problems of authenticity, security and non-repudiation. However, if the e-signature standard and system has to be developed from scratch, it will add complexity to the deployment of the already complex e-filing system. In any case, all the systems are designed to guarantee authentication, integrity, and non-repudiation through a variety of technological means. Integrity ensures that the exchanged documents cannot be modified. Authentication allows people to prove that they are who they say they are. Non-repudiation means that, once authenticated, the person cannot repudiate the identity and, once a document is filed, the person cannot repudiate its content. Despite the few functions provided by a full e-filing application, it entails complexity from an architectural and legal standpoint, which results in difficult and costly development, often followed by failure. When e-signature is required, specific modules

can be integrated into the document management systems of the CMS for the clerks, and of the J/PSS for judges and prosecutors (Figure 12).

E-filing: Critical Issues

Once a robust CMS is in place, data collection is accurate, and the legal framework establishes the criteria to be followed to access case-related data, the development of public access is simple and straightforward. It is easy to improve access to relevant procedural information.

User Involvement

Potentially, the benefits provided by e-filing are much higher, but the high number of failures demonstrates the difficulty of designing effective e-filing solutions. To be effective, most if not all judges working in the civil section must adopt and use e-filing systems. If e-filing is limited to a specific procedure, such as injunctive orders or small claims, only the judges dealing with these proceedings need to use the systems. Indeed, if this systematic adoption is not reached, the court must work with mixed procedures (i.e., paper-based and electronic), which makes case handling inefficient, non-homogeneous, and difficult to be understood by court users. Therefore, these e-filing systems should be deployed only when it is certain that key court staff (judges and clerks) can use the procedure in the domain where the e-filing system is meant to be used.

The same applies to lawyers and court users in general. If lawyers prefer to file cases at the court counter, or the parties cannot access the e-filing platform for lack of infrastructural support, the e-filing platform will not deliver any positive impact on key judicial values. Strategies can be deployed to promote the use of e-filing systems. For instance, Austria granted a reduction in court fees for cases filed via e-filing, while several Italian courts have reduced the opening hours of court counters, making it more difficult to file cases at the counter. Finally, making the use of e-filing mandatory is not a quick fix to boost the use of the system. It is a valuable choice only when most users already use the platform regularly, and the systematic use has tested the reliability of the system.

Procedural Complexity and Standardization

Developing e-filing development with simple procedures such as injunctive orders or small claims eases the streamlining and the standardization required by the design of a system to produce functional technologies. However, in many cases, the e-filing system must manage a large variety and number of documents, which makes the deployment more challenging. For example, a patent case involving large companies requires many expert witnesses' reports, a variety of briefs, a number of joinders and rejoinders that have to be summoned and notified, and several hearings to be managed. In this case, the system must be designed to allow and facilitate the management of heterogeneous documents, and the procedural compliance of all the court's and parties' actions. In this case, the complexity of system development and use is very high and challenging.

Therefore, it is easier and more successful to develop e-filing for simple proceedings, rather than for complex ones. In the former case, an e-filing system will accommodate lower procedural complexity and heterogeneity, which makes its development simpler and its impact more positive. Moreover, since the largest volume of cases with which courts usually deal (Kujanen and Sarvilinna, 2001)

require simple proceedings, their automation will positively impact a larger number of users and deliver more value for society.

Project Governance

In the case of e-filing, project governance is quite complex. It involves different institutions and organizations that will use the new system. The parties have different priorities and agendas, different expectations and requirements, which must be considered and accommodated for the successful deployment of the project. The ministry (or the analogous institution) in charge of the project must work with the bar association, since the e-filing system must be compatible with lawyers' requirements and needs. The ministry, the representatives of the court system, and the bar must agree on shared procedures and shared document standards used to upload and offload data and documents in the different systems.

Judges must also be directly involved. Fully functional e-filing systems require judges to use the electronic files created by the system. If judges already work with judicial support systems, their involvement is easy. However, e-filing is often deployed before judicial support systems. Therefore, the involvement of judges in e-filing is very important for its success. The endorsement and support of the institution in charge of judicial governance (such as the Judicial Council) and the establishment of users groups of judges to sponsor the project are common solutions to facilitate the adoption of e-filing by judges in contexts where judicial support systems are not fully deployed or commonly used. Finally, e-filing often requires changes in the legislation that establishes how cases must be filed, procedural documents exchanged, and parties summoned. The involvement of the legislative office of the ministry (or analogous institution) is therefore highly recommended.

E-filing: Impact on Judicial Values

E-filing may facilitate access to judicial information and, hence, to justice. It also improves public accountability. However, these positive effects might have potential negative impact on the privacy rights of people involved in the proceedings. E-filing might disclose data on the parties involved in the case, and their role and position in it. This might impinge upon fundamental privacy rights of citizens. Differences can be drawn between proceedings in which privacy has primacy (e.g., cases involving minors or family issues) and proceedings in which public scrutiny may take precedence (e.g., commercial disputes). In any case, when designing and deploying e-filing systems, a decision must be made about the proper balance between access and protection of privacy rights. This decision is essentially a political decision which involves dimensions that are outside the scope of this work. Once the proper balance has been struck and the security of data access is granted, e-filing systems drastically improve the efficiency of court proceedings. A full adoption of e-filing represents a revolutionary reform for the court and for court users. Ideally, it can lead to paperless judicial proceedings with multiple benefits.

First, it allows a drastic reduction in the number of court users going to court to lodge or collect documents. This reduces the number of staff units working in the front office, enabling more resources to be allocated to back-office activities and assistance to judges. It also streamlines back-office activities, since there is no need to manage paper files, and the registration of data into the CMS takes

place electronically. This can further reduce the work to be done in the back office. Additionally, e-filing entails increased procedural standardization, since court users, clerks, and judges can follow the standardized routines of the systems. Procedural standardization means more efficiency (i.e., fewer exceptions to be managed by staff) and more legal certainty, since it becomes more difficult to deviate from established procedures.

Public Access Systems

Since judicial institutions may not have a fully functional e-filing system, simpler solutions can facilitate access to basic judicial information by relying on public access systems interfaces. Usually, these interfaces are websites that provide general information (e.g., court organization, business hours, procedures, rules, and forms) to improve access to judicial and legal information, as well as to case-related data collected in the CMS. This information can be made available through the website, but also by email, SMS, or other systems, such as court kiosks or dedicated workstations on court premises. The public access system is meant to provide access to this information without the involvement or support of court staff.

When implementing these solutions, two issues must be considered: the quality of the data collected in the CMS, which must be reliable and continually updated, and the protection of the privacy of the subjects involved. This second issue is managed in different ways across countries. Privacy protection is a high priority in European Union member states, particularly those with civil law, while it is generally less important in common law countries.

Privacy protection regulations affect the security features required to access the data, and the data that are made accessible to the users. Accordingly, systems can provide free access to the main case-related data (including on actors, judge, lawyers, subject matter, and hearing schedule) and caseload. It can provide only anonymized data or control the access to data by forms of login and authorization. In the latter case, people who log in can only access data related to their own case. To govern the login process, ad hoc architectures are needed, and additional technological and legal layers must be in place to govern the authentication process. Authentications can be very different, varying from “simple” registration based on username and password, to much more complex and secure systems, such as smart cards and digital signature, based on key public infrastructure. In the latter cases, the legal framework that regulates data protection establishes the main features of the technological system needed to guarantee adherence to data protection standards.

Criminal Justice Chain Interoperability Platforms

Criminal Justice Interoperability: Background

When using paper-based work sequences, the same data must be re-entered frequently in different procedural stages. This creates problems of efficiency and data quality and reliability. Mistakes can be made during the data entry process. From the police report to the final decision of the court, from the start of prison or probation period to its conclusion, the same data are entered dozens of times.

A key focus of the development of e-justice systems has been the solution of these data entry repetitions by developing integrated and interoperable systems across the justice sector. ICT-based systems can help solve these issues by establishing interoperability among agencies' systems and databases, increasing the operational coordination among the different agencies of the justice chain.

The concept of interoperability may have various meanings. It is commonly used to indicate the ability of organizations to work together to achieve common goals, as when policymakers emphasize the need of the law enforcement agencies to work together to investigate, prosecute, and judge criminal offenses. This approach emphasizes the outcome, but does not resolve the conditions that make interoperability possible.

The European Interoperability Framework states that interoperability is possible through the "sharing of information and knowledge between organizations via the business processes they support, using the exchange of data between their respective information and communication technology (ICT) systems" (EIFv.2.0: 2). Then the question becomes, what are the technical and institutional conditions that make such exchange possible?

The conditions of interoperability reside in both the characteristic of the systems in place in each agency and in the underlying infrastructure that supports system operations and communication. The ICT systems in place must have minimal functionalities to make interoperability possible (e.g., coherent data sets and accurate data collection), or procedures to extract and receive the data to be exchanged. Such requirements are minimal and may appear trivial, but their absence is one of the reasons for the many interoperability failures that affect the deployment of judicial chain systems.

Interoperability also depends on the existence and the quality of the infrastructure supporting the operations of the agencies and their business processes. To develop a criminal justice interoperability platform, three types of infrastructures must be considered: technical, legal, and institutional.

Technical infrastructure consists of a shared set of standards, protocols, and gateways that link running applications, programs, and systems. It connects, supports, and enables the exchange of bits, data, and information between different technological and human agents. However, when ICT components are shared, there can be an exchange of bits and data between the systems, but their exchange may not comply with the existing legal framework. To guarantee the legality of the exchange process, there must also be a shared legal framework.

Legal infrastructure consists of shared legal principles and rules that, on the one hand, help agencies to communicate and interoperate (e.g., by establishing a national e-government standard), and, on the other, make the exchanges of bits and data effective from a legal standpoint. The transfer of bits (i.e., the technical side) becomes an exchange of judicial data and procedural documents only if the exchange is regulated and approved by law. Developing a criminal justice interoperability platform also requires clear rules and features of the exchange (e.g., e-signature standard). Hence, an institutional infrastructure must be in place to coordinate these activities.

Institutional infrastructure consists of bureaucratic procedures and organizational routines that can carry out the relevant administrative and business processes across participating agencies. It cannot be taken for granted that the preexisting institutional infrastructure supporting the paper-based exchange of procedural data and documents can be useful in the new digital domain. A typical issue pertains to the quality of the procedural data exchanged. If the systems are not interoperable, the quality and consistency of the data entered into the CMS of the PPOs are not relevant for the court, and vice versa. However, once such systems become interoperable, quality and accuracy matter. Errors, inconsistent data definition, or different degrees of accuracy may nullify the benefits of the platform and block its usage.

The development of such a three-layered infrastructure is a prerequisite for the institution of a criminal justice interoperability platform and, more generally, a multi-agency interoperability system. However, another factor has to be considered. The CMS and the three-layered infrastructure are not static; they evolve, and shift and drift. The CMS of one agency may need to be updated, the legal framework may change, and institutional routines may change. All of these changes put interoperability at risk. Flexibility and adaptability are also needed when pursuing interoperability.

The case studies from Spain, Italy, and Portugal analyze the attempts these countries have made to develop such systems, the problems they have faced, and the mixed results they have achieved so far. Major failures can be observed in other countries as well.

Criminal Justice Interoperability: Functions

The functionalities of interoperability solutions of criminal justice are similar to those provided by e-filing. Essentially, interoperability in criminal justice entails the following:

- Exchange of procedural data and documents among agencies
- Access to state agencies' data bases (one-way communication, read only)
- Data exchange among the CMSs of the different agencies (two-way communication, data exchange)
- e-Summons

Exchange of Procedural Documents and Data among Agencies

In summary, with full data and document interchange, all agencies participating in the criminal justice chain can use the data that the police enter into the crime report and into the police CMS. Once the police officer refers the case to the PPO, data are transmitted electronically together with the report and the evidence collected. These data and documents populate the case file repository and the CMS used by the PPO. The PPO's task is simplified, since now it only controls the accuracy of the data, rather than collecting it and entering it in the system. Similarly, the systems support the data entry and exchange when the PPO decides to file the case to the court and when the court issues the decisions. Moreover, other institutions involved in law enforcement, such as tax agencies, prisons, and probation departments, can be included in the system.

Many justice systems have not yet implemented these interoperable platforms. However, alternative solutions are available to overcome some of the challenges that affect the successful implementation

of interoperability solutions of criminal justice. While these solutions offer limited forms of interoperability, they can provide benefits and are less difficult to implement. Such options are complementary solutions. In practical terms, each justice system should identify the appropriate time to have a full exchange of data and documents and when simpler forms of interoperability are sufficient to achieve these goals.

Access to State Agencies' Databases

The first option is offered by opening the access to agency databases, such as criminal records, motor vehicle registry, driver's license registry, land registry, company registry, and population registry, to courts and prosecutors' office. Regardless of the limitations of such an option, it saves time when searching for data. Obstacles, such as ownership of the database, privacy or identification of proper use of the data, can make adoption of these solutions difficult, although their development from a technological point of view is quite simple.

CMS-to-CMS Data Exchange

The second option is to limit interoperability to data exchanges, focusing on the procedural data collected in CMSs. This is much simpler than the design of interoperability for both data and documents. The advantages of these solutions are limited to the data flow, since case files still circulate in paper form. However, such solutions provide relevant benefits and are much easier to implement than interoperability of data and documents.

e-Summons

The third option is to take advantage of existing back-office technologies to create a digital channel of communication with lawyers and case parties. With the proper legal framework, summons can be served electronically, resulting in time and cost savings (Figure 13).

FIGURE 13. Unpacking Criminal Justice Interoperability Platforms

Users	Main components	Subcomponents and modules
Clerical staff in courts and prosecutors' offices	Document management	[see judicial/prosecutorial support systems]
	E-exchange	<div>CMS to CMS data interchange</div> <div>Access to state agencies databases</div> <div>Procedural document exchange</div> <div>E-Summons</div>
Judges and prosecutors	Document management	[see judicial/prosecutorial support systems]
Lawyers	Document management	
	E-exchange	

Source: Authors' elaboration.

Note: Lawyers' systems are not discussed herein.

Criminal Justice Interoperability: Critical Issues

Technological Framework

To successfully design and deploy interoperability solutions of criminal justice, it is important to have and share common technological standards. The presence of common standards facilitates the establishment of technical interoperability. The lack of common standards will require the development of mid-layer gateways and connectors, which would increase system complexity of the system and maintenance costs. The technological issues are more acute in countries where the installed base is made up of old legacy systems. Unfortunately, this situation is common for many countries. When old legacy systems are present, interoperability must be achieved by creating channels of communication between the outdated systems, rather than creating new integrated CMS from the scratch.

Security

The management of criminal cases must meet very high security standards. The imposition of high security requirements may increase the technological complexity associated with the development of the systems and management costs. Therefore, it is advisable to take an incremental approach to document and data exchange. One option is to start with data exchange and approach document exchange at a later stage. A second option is to develop the exchange just for courts and prosecutors' offices and, once a common standard is established, extend it to other agencies.

Systems Architecture and Institutional Constraints

The technological architecture of interoperability systems of the criminal justice chain must respect the institutional roles and separations imposed on the actors involved. It is important to ensure that the systems do not breach the separation between courts and prosecutors, which is clearly formalized in many countries. There have been instances where systems have breached the boundaries that separate prosecutors and courts, such as when a system developed and managed by a court must be used by prosecutors, or vice versa. To avoid this problem, solutions have been designed where the ministry of justice oversees both systems. However, even when the system is unique, databases (of courts and prosecutors) must remain separate, with clear ownership rules.

Despite their potential, ICTs have not been sufficiently exploited by developing interoperability among criminal justice systems, at least in Europe. This state of affairs (Fabri, 2008) described has not improved very much.⁹ The integration of the criminal justice chain is difficult, because the many actors involved use their own ICT tools. In addition, the transactions must avoid any situation where an agency that is not entitled to access certain data can obtain it through another information system. From a governance perspective, the problem seems more acute in countries with a federal system of government, where each decentralized jurisdiction has its own budget and tends to develop

⁹See the European Commission for the Efficiency of Justice study "European Judicial Systems: Use of information technology in European courts in 2016" available at <https://rm.coe.int/european-judicial-systems-efficiency-and-quality-of-justice-cepej-stud/1680786b57>.

its own ICT system, limiting exchange of information (Fabri, 2008). From a technological standpoint, the problems are more acute in countries in which the installed base is made up of old legacy systems. In this case, interoperability must be achieved by creating channels of communication between outdated systems rather than creating new integrated CMS from scratch. For many years, outdated infrastructure has also affected the deployment of interoperability, with law enforcement agencies operating with networks (closed or proprietary) that are difficult to make interoperable with more open standards (Contini, 2001). The limited interoperability between different systems, and therefore the various organizations involved, is a hindrance that makes e-justice innovation difficult to implement.

Project Governance

E-filing and criminal justice interoperability systems share similar functionalities. However, the institutional frameworks of the two systems are quite different. With e-filing, the court (or the judiciary) is the primary actor; efforts and plans must be coordinated with the bar and other relevant institutions, and new laws may be required. However, the case of the criminal justice chain is more complicated.

The establishment of interoperability in the criminal justice chain requires the collaboration of the relevant public institutions (i.e., courts, prosecutor's offices, bar associations and lawyers, prisons, probation agencies, tax offices, and bankruptcy agencies). The various technological installed bases (i.e., architectures, standards, data sets, and providers) present in each institution must be accommodated. Moreover, the new system must incorporate the different technological plans and priorities, and agendas of each institution. New laws and bylaws are often required.

Due to the magnitude of the required changes, the development of interoperability across the digital justice chain is better understood as a complex judicial reform, rather than a technological project. The successful deployment of this technological system leads to (and requires) a great degree of integration and cohesion among the different independent agencies of the justice system. As the case studies demonstrate (see for instance the SICP case below), the lack of cohesion and collaboration among the ministry, the judicial council, and the parliament are key factors that lead to failure of these reform projects.

Interoperability Development: Impact on Judicial Values

As with e-filing, the implementation of interoperable systems across the criminal justice chain is a revolutionary reform for agencies engaged in criminal justice. Ideally, it can lead to paperless judicial proceedings with multiple benefits, streamlined access to data relevant for investigations and judicial decisions, and positive effects on the values to be upheld by the justice system.

First, they can save time by managing and tracking procedures more efficiently, with increased accountability and legality of the handling of cases. More streamlined and standardized procedures also lead to improved effectiveness, and equal treatment is another relevant value of the rule of law. Finally, prompt access to relevant data can improve the effectiveness of police and prosecutorial investigations.



1.8 E-justice Case Studies

SICP: The Challenges of Developing an Interoperable System across the Criminal Justice Chain in Italy

Why: The SICP (*Sistema Informativo della Cognizione Penale*) is the criminal CMS used by all Italian courts and PPOs. The case is relevant to illustrate the challenges in making courts and PPOs systems interoperable. The case provides useful insights into how these challenges should be addressed to effectively deploy interoperable systems across the criminal justice chain.

Context: Governance of the Italian judiciary is split between the Ministry of Justice (MoJ), in charge of the organization and functioning of all services related to justice (Article 110 of the Constitution), and the Judicial Council (or Superior Council of the Magistracy), responsible for a broad range of functions associated with the status of judges, prosecutors, and justice organization. Accordingly, the responsibility of the design and deployment of ICTs is mainly the Ministry's responsibility. However, it is important for users' support and system governance that the Council actively sustains and collaborates in ICT projects.

Case history: REGE (*Registro Generale*) is the CTS used by Italian courts and PPOs since the early 1990s to 2015. The system provided the ability to register cases and some data interoperability between offices as well as limited case management functionalities. Since the end of the 1990s, the Ministry made various attempts to develop a CMS to provide the backbone for the new e-justice platform of the criminal justice chain. The first two attempts to develop a CMS (REGE Relazionale and REGE Web) failed, mainly because of design choices. The hardware and software requirements to fully support the system functions were very difficult to implement, at the time, due to resource constraints. A fully functional server had to be built and installed at each PPO. All servers had to be interoperable and connected to allow synchronous data exchanges. The systems required new hardware configurations that were not available in the organizations and that were too expensive to acquire. Similarly, the needed bandwidth to enable all the desired functionalities was too expensive to deploy. The design did not fully account for the characteristics of the existing infrastructure and for the barriers that prevented the changes the new system required to be fully functional. As a result, response times in both systems were slow and unable to support the activities and needs for which they had been designed.

To tackle these failures, the Ministry undertook a third attempt to develop a fully functional integrated CMS in 2005/6. The system, called the SICP, was designed and piloted in few courts and PPOs. It was designed to overcome the problems of REGE Relazionale and REGE Web by transferring the data to a few large centralized servers. This new architecture would have made it possible and sustainable to develop a fully functional and integrated data network to support data sharing and procedural interoperability among courts and PPOs. However, although this solution was effective from a technical standpoint, it contrasted with the existing legislation (or its prevailing interpretation), which required all information produced by local PPOs to be stored on a server that was physically located in the same PPO. The needed changes to allow the deployment of the new architecture were not approved. In fact, the political climate of the time and the constant tensions between the executive and the judiciary made it impossible to approve the simple legal changes required to relocate the databases in regional offices. Consequently, the original REGE system, which had been designed in the early 1990s, was used in courts and PPOs until 2015.

To overcome the challenges posed by the poor functionality of REGE, courts and PPOs implemented several local systems to support their caseload. Courts and PPOs dealing with serious crimes (e.g., organized crime, terrorism, and white-collar corruption) could not manage the massive caseload with the existing functionalities of REGE. They developed local heterogeneous, non-interoperable systems. This was made possible by institutional and legal changes. The high number of ad hoc systems in use around the country exponentially increased ICT maintenance costs of the overall judicial system and increased procedural and data inconsistencies across courts and PPOs. These inconsistencies, coupled with the outdated technological platform that supported courts and PPOs, became huge barriers to be overtaken to support interoperability between law enforcement agencies and the justice domain. It was estimated that Italian courts and prosecutors' offices were using about 20 different applications to handle criminal procedures in 2014. That same year, it became evident that REGE had to be replaced with a modern CMS to finally develop the needed interoperability across the criminal justice chain and to simplify the technological landscape of the judiciary.

Accordingly, the Ministry decided to re-deploy the SICP, fostering the necessary institutional changes and legal workaround to make the system work. A new political climate and improved cooperation between the Ministry and the judicial council made this possible.

After an in-depth analysis, the Ministry decided to make the SICP the common CMS to be deployed in all Italian courts and PPOs. It coordinated the negotiations with PPOs and the courts to establish the guidelines for the use of the SICP for data management. The new agreement enabled a reinterpretation of the law, which is not changed, and prosecutors accepted the new centralized architecture. All barriers that had led to the failure of the SICP in 2008 were finally overcome, and a fully integrated and interoperable CMS was implemented in all Italian courts and PPOs in 2015–16.

The transition from dispersed, non-interoperable applications to an interoperable landscape is not a simple process and is still ongoing. The effects of past decisions and past technological deployments created path dependencies that are complicated and difficult to eliminate. Judges and prosecutors work with the SICP in parallel with preexisting decision support systems and other applications that support procedures which have not yet been integrated into the SICP. As a result, the SICP works alongside a multitude of old systems that it was meant to replace.

Systems functions: The SICP offers two sets of functionalities: one for prosecutorial (PPOs) and one for judicial (courts) functions. Since they use the same systems, it provides full interoperability between the two agencies. The SICP also embeds an e-filing service for police forces.

The SICP provides the following services:

- E-filing portal: a website used by police forces to file cases (not interoperable with police databases).
- CMS functions:
 - Criminal registry

- Cases database and workflow module allowing control of the main procedural steps
- Procedural documents subsystem (designed for administrative staff work)
- Pre-trial measures database and workflow (e.g., custody and seizure)
- J/PSS functions:
 - Judicial and prosecutorial documents
 - Deadlines monitoring and to-do lists
 - Calendars and judicial officer case lists
 - Random case assignment to the judges
 - Statistical interface

Discussion: The status of development of interoperable systems across the criminal justice chain in Italy is the result of many factors. The process lacked direction, and the MoJ failed to provide clear oversight over the development of interoperable systems across the Italian criminal justice chain. As a result, REGE, an outdated case tracking with poor functionalities, remained in use for 25 years. While poor and badly planned technological choices are the cause of most of these problems, institutional, organizational, and political factors were major barriers to the successful deployment of interoperable systems.

The pilot version of the SICP failed because of opposition of some prosecutors, who challenged the system's legality and refused to use it. The Judicial Council had the authority and power to resolve the prosecutors' legal challenge, endorse the system, and push for its national adoption. However, the Judicial Council declined to act, and the prosecutors' opposition prevailed. Nor did the Ministry or Parliament intervene to amend the law that prosecutors believed made the deployment and use of SICP unlawful. This combination of factors halted the deployment of the SICP for more than 10 years.

This case highlights the complexity of criminal procedures. Parallel systems remain in use even when fully integrated and interoperable systems are deployed. Indeed, the Italian criminal justice chain still relies on quite few systems other than SICP to manage specific procedures such as precautionary measures, criminal investigations, and national criminal registries.

Lessons learned: This case helps identify key factors that impact the successful deployment of interoperable systems across the criminal justice chain. These factors are related to institutional cooperation, path dependency, legal and technological factors, and organizational complexity.

Institutional factors

- The lack of strategic alignment and collaboration between the Ministry, the Judicial Council, and the Parliament was the reason of many failures during the deployment of SICP. The lack of coordination and cooperation among the key institutional actors seriously undermined the deployment of the pilot version of SICP.
- When there is cooperation among key institutional actors, it is possible to successfully design and deploy interoperable systems across the criminal justice chain. The case shows that, in 2014, improved cooperation among the MoJ, the Council of Justice, and the Parliament led to the successful deployment of the SICP.

- The political climate affects power balances and institutional relationships among the key actors, as well as the interpretation of existing legal framework.

Path dependency

- The design of an e-justice application to support a judicial function or office creates legacies and path dependences that might impinge upon future development.
- The development and deployment of interoperable systems across the criminal justice chain is a long-term undertaking that must consider the complexity of the existing architectures upon which it builds.

Law and technology

- The development and deployment of interoperable systems need legislative support and changes to the existing legal framework.
- The digitization of criminal justice procedures requires technological as well as legal innovations and commitments.

Organizational complexity

The development and deployment of interoperable systems across the criminal justice chain must take the needs of many different organizations into account. The specific needs of the agencies will shape the configuration of the system. In the Italian case, a number of systems in addition to the SICP survived and are used to manage specific elements, such as precautionary measures, criminal investigations, and national criminal registries.

Justicia Digital in Spain: How a Fragmented Governance Affects e-justice Developments

Why: In Spain, the MoJ, the Judicial Council, and 12 autonomous communities share responsibilities for the administration of justice. This fragmented governance structure hinders the development of e-justice. Although Spain succeeded in developing functional e-justice platforms, fragmentation affected the nature and outcome of investments in e-justice. The analysis of e-justice investments in Spain offers valuable insights to understand the impact of the interplay between the governance structure of the judiciary and e-justice development, as well as some of the effects of a fragmented technological infrastructure on judicial governance.

Context: The MoJ manages most governance functions, including e-justice development. The Judicial Council manages judges' careers, defines the budget (administered by the MoJ), and manages the court system. The role of the autonomous communities adds a layer of complexity to the system. Autonomous communities are responsible for the provision of facilities and clerical staff and have the authority to develop court technologies such as CMSs for the communities they oversee.

Prosecutors are organized hierarchically. The government appoints the head prosecutor, who is advised by two bodies: the Board of Senior Prosecutors and the Council of Prosecutors (elected by all prosecutors).

The organization of the court is particularly intricate. Most courts are unipersonal: one judge works with a law clerk to handle minor judicial functions (*letrado*) and supported by several units of clerical staff. The judge's staff also performs registry functions, making registry offices decentralized. The peculiar organization of the court facilitates the development of individual work practices, which leads to poor procedural standardization across the judiciary. Consequently, it is challenging to develop judicial support systems that can account for the work practices developed at the local level.

Organic Law No. 19/2003 introduced the Central Common Procedural Services Units, a new layer of shared support that can help introduce more shared practices in courts and among judges. The impact of this new organizational model on standardization in court practices has been quite limited. After 15 years, only a few courts have introduced the Central Common Procedural Services Units.

Case history: Since the mid-1990s, court technologies have been integrated into the daily operations of courts and PPOs. The configuration of the technological architecture reflects the institutional arrangements that facilitate the emergence of individual practices and standards. The Spanish judiciary currently operates with nine CMSs: eight were developed and are used by courts in the autonomous communities, and another, Minerva, was developed by the MoJ and is used in courts directly supported by the MoJ. Four e-filing systems are integrated with the different CMSs: Justicia.cat, Avantius, and JustiziaSip (created by various Autonomous Communities), as well as LexNet, which was developed by the MoJ. Given the decentralized nature of the Spanish judiciary, legal interventions have been required to support the deployment of integrated e-justice architectures to establish common functional, procedural, and technical standards and facilitate interoperability and cross-standardization throughout e-justice applications.

The first legal intervention that set the scene for more integrated e-judicial architectures occurred in 2007. It regulates the use and functionalities of LexNet, the application adopted by the MoJ to deliver summons and exchange procedural documents. Following this initial intervention, Parliament approved the general framework for the use of ICTs in the administration of justice, including e-filing in 2011. The same regulation established the National Technical Committee (Comité Técnico Estatal de Administración Judicial Electrónica, or CTEAJE) to facilitate the development of e-justice and coordinate related projects. The definition of the legal framework and the creation of the CTEAJE established the required foundation for e-justice development in such a complex institutional setting.

In 2015, Parliament approved the law that requires the use of e-filing in all proceedings. Article 230 of the 2013 Organic Law of the judiciary established that courts must use every available technological system (i.e., electronic, computer, or telematic) at their disposal to carry out their activities and exercise their functions. Electronic documents are legally valid if technical means grant their authenticity, integrity, and compliance with established requirements. Secondary regulations establish the cases and technologies to guarantee fulfilment of these requirements, and when judges and prosecutors are required to use the systems at their disposal. As a result, in 2018 the Judicial Council issued an order that sets the organizational and technical requirements to create

the preconditions for the mandatory use of CMSs, judicial support systems, and e-filing systems by judges and lawyers. The order also specifies the training requirements and the procedure for verifying that the CMSs and judicial support systems meet the technical and functional requirements.

Systems functions: While the legal framework is common across the country, technological implementations differ from region to region. Justicia Digital is the set of systems developed by the MoJ and used in the Territorio Ministerial. It consists of seven applications: LexNet, Minerva Digital, Horus, Portafirmas, the archiving system (Archivo), and two gateways (Wasmin and Cargador) to build interoperability between Minerva Digital and external systems. LexNet is the platform for the secure exchange of information between judicial bodies and legal professionals. It is used to exchange a large variety of procedural documents. It is like an e-mail system, but it guarantees additional security (i.e., authenticity of the sender, confidentiality and integrity of the content, non-repudiation of the message) and certifies the date of delivery of the document. According to the MoJ, LexNet meets the communication needs of the administration of justice, including standards for notifications and exchange of documents. It is accessible to non-judicial actors, such as case parties, and interoperable with the different CMSs throughout the country. Once a case has been filed via LexNet, Minerva Digital manages it electronically: checking the data filed, assigning the case to a judge, identifying the tasks to be fulfilled, and undertaking the multiple tasks required for the management of the case, such as registration and drafting of procedural documents. Minerva also enables monitoring of pending cases.

Typically, once a case has been assigned, the judge instructs the clerk on how to handle it and, when needed, gives directions about how to draft documents (e.g., orders and sentences). The clerks use Minerva to draft the documents. Once the draft is ready, the judge can proofread it with a file viewer (Horus), and sign it with Portafirma. If the judge is not satisfied, he/she can return the file to the clerks with instructions. Minerva enables limited feedback from the judges to the clerks. Once the document is signed, it is saved in the repository of electronic case files and served via LexNet to the case parties.

The workflow in the Spanish e-justice system is not seamless. The various components of Justicia Digital are not integrated. For example, to see a document in a case file, the clerk must check the case number on Minerva, log in to the file viewer, and enter the case number.

The support staff working play an important role in shaping the services enabled by Justicia Digital. Indeed, even when new organizational model has been implemented, and the number of units supporting the judge has been reduced, a team that can be composed of a pair of senior law clerks and a pair of junior law clerks, plus the *letrados* with quasi-judicial functions, assists each Spanish judge. Under the direction and supervision of the judge, the support team takes care of a large amount of the administrative work, including the drafting of most documents. Hence, the support team provides a human interface between the e-justice applications and the judge. These services contribute to solve problems associated with the deployment of judicial support systems.

Although the majority of Spanish courts work with LexNet, the system is not the national e-filing standard. The autonomous communities of Cantabria, Catalonia, and Navarra have developed their

own e-filing systems (Avantius, JustiziaSip, and Justicia.cat) that meet the requirements established by the various regulations. LexNet provides the e-filing functionalities to the Territorio Ministerial and to the other autonomous communities: Andalusia, Aragon, Asturias, Canary Islands, Catalonia (only for sending notifications), Galicia, La Rioja, Madrid, and Valencia.

Discussion: The Spanish e-justice system encompasses nine CMSs and a governance structure where autonomous communities can develop court technologies. Given these conditions, it is not possible to integrate or standardize the CMSs used in the different regions and courts. The introduction of the e-filing system also made the Spanish e-justice architecture more complex. Despite the common legal framework which was defined by the legislation that enabled the use of e-filing (2007) and the legislation that made e-filing mandatory starting in 2015, a number of different e-filing systems remain in place. Most courts use LexNet, but three other e-filing systems are still used in some courts. Hence, the necessary systems to e-file a case and exchange procedural documents electronically are different from court to court. Lawyers may need more than one e-filing system if they work throughout the country. The deployment of a national gateway to establish interoperability among current non-interoperable e-filing and CMSs would add another layer of technological complexity. It would be difficult to develop because the gateways would need to homogenize many technical and procedural standards.

The lack of standardization among the different e-justice components also hinders the application of procedural law. The same occurs with the four e-filing systems. The development of different CMSs and filing systems puts the equal treatment of citizens before the law in jeopardy. To address these problems, the Judicial Council established minimal compatibility requirements and carried out tests to check the system's fulfilment of the minimum required standardized functions before it required the use of any e-filing system. This intervention provided a minimum framework to assure that the functioning of different CMSs and e-filing platforms would not inject unacceptable differences in the application of procedural laws and, hence, in the fairness of the judicial system.

The CTEAJE also plays an important role in the move toward a more integrated and homogeneous judicial system. It provides an institutional framework for cooperation between the bodies involved in e-justice development, as well as technological advances that help to increase coherence among the components of the system, promoting interoperability and security.

Lessons learned: The experience of LexNet, and more generally Justicia Digital, provide relevant lessons on how to develop integrated solutions within a decentralized governance structure, and on the challenges to be faced while deploying a nation-wide e-justice platform.

Institutional factors

- The fragmented governance structure of the Spanish judiciary is the most important factor shaping the trajectory of e-justice development.
- The institution of central coordinating bodies, such as the CTEAJE, can help develop national standards that facilitate interoperability.

Path dependency

- Twenty years of decentralized and uncoordinated technological developments are difficult to overcome. This makes the deployment of common national solutions challenging.
- The attempt to use *LexNet* as national e-filing application and to make e-filing mandatory was a logical attempt to overcome the inertia deriving from technological and governance path dependency to build a new trajectory for e-justice development.

Law and technology

- The common legal infrastructure developed between 2011 and 2015 provides a uniform framework that spurs the system to build components based on common functional standards. However, legal regulations do not guarantee systems interoperability and do not change the inertia of the system.

Organizational complexity

- The strong support of the organizational setting limits the judges' direct usage of the applications of *Justicia Digital*. The introduction of these support units can help to maintain the e-justice system but does not help to increase its overall efficiency.

Economy

- The coexistence of several CMSs and e-filing systems constitutes an effective e-justice platform, but such a solution is much less efficient than a nationwide e-justice platform would be.

CITIUS: Law and Technology Dependency in the Nationwide e-justice Platform

Why: Portugal is one of the first European countries to deploy a national e-justice platform with mandatory e-filing in civil proceedings. The case helps to understand the factors affecting e-justice adoptions (i.e., e-filing, judicial support system, and CMS), and the difficulties that emerge when legal changes impose modifications in the existing ICT infrastructure. CITIUS vividly illustrates the judicial risks when users depend upon an ICT infrastructure. The case also helps to frame the nature of the coupling between law and technology that inescapably occurs when e-filing systems are deployed.

Context: The MoJ, The High Council for the Judiciary, and the High Council of the Public Prosecution Service share the functions and responsibilities for the governance of the Portuguese justice system. The MoJ is in charge of policymaking and of the organization and functioning of courts and PPOs. The two councils are responsible for the management and progression of judges' and prosecutors' careers (i.e., appointment, professional evaluation, promotion transfer, and discipline). ICT development is mainly under the responsibility of the MoJ. However, when ICT development involves judges and prosecutors' working practices, the support and endorsement of the two councils are highly beneficial.

Functions: CITIUS allows e-filing and electronic management of procedural files in civil and criminal cases. It is composed of a set of modules: a CMS, which is used by clerks in courts and PPOs (*H@bilus*); a judicial support system, which judges and prosecutors use to draft and manage procedural

documents; and an e-filing platform, which is used to exchange electronic documents between courts and lawyers. Components of other systems support digital identity and signature. Services are available for both first instance and appeals courts. The architecture of the systems is client-server.

In civil proceedings, the use of electronic procedures to file cases and exchange procedural documents has been mandatory since 2011. In criminal justice, the exchange of case-related documents between courts, PPOs, and lawyers via CITIUS is legal and effective, but its use is not mandatory, yet.

Although CITIUS is designed for professional users, in 2018 a new web interface was developed to provide direct access to case-related information, and various services to be delivered by the justice system <https://justica.gov.pt/> to case parties and the general public. The latter development can be understood as an attempt to improve access to justice by exploiting the functionalities offered by the existing platform.

History: In Portugal, ICT development has been carried out in-house. The ICT department of the MoJ (DGAJ/ITIJ) coordinates the development with the advice of the Judicial Council, the Public Prosecution General, and the bar. A group of clerks created the first case tracking system at the end of the 1990s (*GPCivel*), and in 2005 they developed the CMS called *H@bilus*. Two years later, after the first legal change that enabled e-filing, the same group of clerks started the development of CITIUS and its components, specifically the J/PSS, as well as the interfaces for court staff and lawyers. All these components were developed using Visual Basic 6 (VB6), an obsolete, but easy to use program, not recommended for large and complex system developments.

CITIUS ran steadily in 2007. Its use became mandatory at the beginning of 2009. The launch of the system was supported by training courses, and by the distribution of laptops and the needed digital certificates to handle the digital identity and signature the system required for all its users. The adoption was relatively smooth for clerks and administrative staff; it was facilitated by their experience working with the CMS *H@bilus*. The adoption of the system by judges and prosecutors was more problematic, because they had no previous experience with the use of e-justice applications. They had to learn the functionalities of the e-justice application from scratch, and they complained about some mismatches between the workflow embedded in CITIUS and their own work practices. However, despite these critical issues, the Judicial Council and the Bar Association remained supportive of CITIUS, welcoming the benefits the system could bring to the efficiency and effectiveness of judicial procedures. This support helped foster the adoption of the system. Since 2009, CITIUS has been regularly used in all civil proceedings and, to a limited extent, in criminal ones.

In September 2014, several district courts closed. This reform required several changes to CITIUS, particularly the redesign of the automatic assignment of cases to match the new boundaries of court jurisdictions. To align CITIUS functionalities with the new court jurisdictions, the MoJ released a new version of the program at the end of August 2014, three days before the entry into force of the reform. For technical reasons, the data migration from the old to the new version of CITIUS failed. All 3.5 million cases which had been recorded in the system were not accessible via CITIUS when courts reopened for business on September 1, 2014. Furthermore, the system was inaccessible, and it was impossible to e-file documents. Lawyers could not see the name of the judge who had been

assigned to the case, had no idea how to file an appeal, how to request precautionary measures, or how to serve a procedural document to a party.

The CITIUS breakdown led to the paralysis of the judiciary for two weeks. In response, the old paper-based routines were resumed. After 15 days of breakdown, the MoJ managed to restore the functionality of e-filing but only for new cases. Judicial professionals could not access the 3.5 million cases that had been recorded in the old CITIUS. An official MoJ communication had to clarify that: “There will be a gradual process, [...] to fully integrate all the cases filed before September 1, 2014, into the new version of the CITIUS platform [...]”

All the migration problems were solved by the end of December 2014 and, since then, the platform has been working properly. To solve all the migration issues, each case had to be manually processed and uploaded into the new CITIUS version. Understandably, the breakdown triggered critiques, public outcries, suspects of sabotage, and an investigation by the Judicial Inspectorate. The Judicial Inspectorate submitted a report on the event to the MoJ, which was not made public. As a result of the migration breakdown, the MoJ dismissed the directors of its ICT department.

Even if the reasons for the technical failures were not made public, the case provides valuable insights to consider regarding the implications of technical failures when courts and PPOs’ tasks are fully enabled by (and dependent on) digital media. When judicial procedures are based on a technological platform and the platform fails, a failure of the rule of law occurs: procedural laws become inapplicable, and justice cannot be administered.

Discussion: Portugal succeeded where many other judiciaries struggled. Portugal was able to deploy a fully functional e-justice architecture that is common and well accepted across the country. For this reason, the case is useful to illustrate some key features of e-justice developments, and the advantages and challenges emerging from judicial procedures that are fully enabled by and dependent on an electronic platform.

The case highlights different technological adoption paths by clerks, judges, and prosecutors. Clerks easily adopted the CMSs (*GPCível* and *H@bilus*) which were designed by colleagues who were both ICT developers and “business domain experts.” Moreover, the CMSs did not deeply change clerks’ routines. Administrative procedures were standardized and straightforward, hence they were easier to be digitized without changing their users’ work routines. The adoption of the judicial support systems by judges and prosecutors was instead problematic. Judges and prosecutors lacked the needed ICT skills, but also found challenging adapting their work routines and procedures to those the ICT systems embedded. Judicial and prosecutorial routines are difficult to standardize and, therefore, difficult to replicate in the ICT system. To fully exploit the features of judicial support systems, judges and prosecutors had to accept and adapt to the new digitally enabled routines. This was facilitated by ad hoc training programs and the support provided by the MoJ.

The case also highlights the advantages of ICT development carried out by experienced clerks who previously worked in PPOs and courts, for the deployment of easy-to-adopt systems. It is unusual to have experienced clerks in charge of ICT development, but it provides the advantage of detailed

institutional, and often tacit, knowledge about the procedures and routines to be digitized. However, experienced clerks might lack the needed technical expertise in system development to implement robust and reliable technological architectures.

The system breakdown that occurred when CITIUS was updated and the subsequent closure of the entire justice system for 15 days (and having it working in degraded mode for another four months) unveiled a system development that was not fully supported by the necessary technological skills. *H@bilus* and CITIUS were mostly developed with VB6, an outdated programming language which is simple to use but has several vulnerabilities. VB6 can meet the requirement of small-scale office automation, but it is not suitable for nationwide e-justice solutions. The involvement of ICT specialists to provide programming capacity with state-of-the-art technologies can reduce the risks of developing large-scale infrastructure with outdated and vulnerable technologies. ICT specialists alone may not be able to adequately map the business processes and incorporate the practices and tacit knowledge required for the proper adoption of the technological platform. Hence, a balanced approach is needed to fully exploit the contributions of ICT specialists and business domain experts.

The CITIUS breakdown also highlights the mutual dependency between law and technology in judicial proceedings. All the components of the platform were working well before the introduction of the legal change redefined the courts' jurisdictions. The changes in jurisdictions also required technological changes to become effective: technology enabled the implementation of legal reforms. For this reason, once e-justice technologies are in place, the consequences of any legal change on the technological components (and the changes required) should be considered, and each technological component should be developed considering the need for adaptation that will arise in future legal reforms.

Lessons learned: The CITIUS case provides relevant lessons about the development of court technologies discussed in this white paper.

Institutional factors

- The support of judicial and prosecutorial councils is essential for the successful deployment of the system. This long-term cooperation, which was missing in other case studies (e.g., SICP), is a fundamental institutional prerequisite for the successful adoption of e-justice.

System design and development

- CITIUS is one of the few e-justice platforms that was developed in-house. Such a model helps to identify the pros and cons of this approach. Knowledge of the business processes and the tacit knowledge supporting courts and PPOs' operations is needed for e-justice components to be coherent with organizational and procedural features. The in-house system development eased the involvement of clerks and magistrates and made use of their knowledge about the business process. Typically, though, in-house development means that the high-level ICT skills that the system development requires are not used.

Law and technology

- Technologies have to be developed with the idea that they will be enduring institutional components and that during their life cycle they will be continually updated. Hence, when

adopting technologies, both their short-term performance and their ability to evolve must be considered.

- Once they are placed and used regularly (or made mandatory), e-justice systems embed procedural laws and enable the flow of procedures. If the technology fails, a failure in the rule of law also occurs. As a result, even when the use of e-filing platforms becomes mandatory, the legal framework must provide the possibility to suspend the use of the ITC-enabled procedures and revert to paper-based ones to ensure that justice can be administered.

MCOL: The Challenges of Developing an e-filing System in England and Wales

Why: MCOL is the e-filing system currently used in England and Wales to manage money claims and resolve financial disputes with a fixed amount. The system is used for all money claims up to £100,000. The case illustrates the importance of aligning court organizations with new technological developments. It also highlights the importance of institutional factors to determine the success of e-justice systems. The case provides useful insights on how to align court organizations with the reconfiguration of ICT processes and how to leverage institutional factors to enhance the value of ICT-led reforms.

Context: Annually, courts in England and Wales manage more than 2 million money claims and the associated disputes. In a fixed money claim dispute, the parties file a number of formal documents, and the court where the case is initially filed processes them.

Case history: Lord Woolf's report Access to Justice (1996) outlined a set of recommendations that became key drivers of the white paper Modernising Justice (1998). Key recommendations included a reform to improve access to justice, to reduce the cost of litigation, to encourage alternative dispute resolution procedures, and to reduce the complexity of the rules and terminology through the deployment of ICTs. A fundamental component of this reform, passed in 1998, was the design of pre-action protocols setting standards and timetables for the conduct of cases before court proceedings are started. In the context of money claims, pre-actions protocols constituted most of the workload for courts, since only around 20 percent of the cases were contested. This means that in 80 percent of the cases, the defendant admitted that they owe the money and offers to pay it or, if the defendant ignores the claim or fails to pay, the claimant gets a court order automatically in his/her favor. MCOL was developed in 2002 to supporting pre-action protocols, facilitating the exchange of documents between the parties and eliminating the need for court involvement. MCOL automates the case management of all money claims below £100,000. It has dramatically reduced the court workload and facilitated interaction among the parties.

The digitization and automation of the case management of financial claims has had a huge impact on the efficiency and effectiveness of the judiciary in England and Wales, since most claims that come before county courts are for a specified amount (76 percent of all claims in 2016).

System functions: *Money Claim Online* offers a simple and effective interface (website) to submit and manage claims. The website guides the claimant through the submission and ensures

that all the needed data and pieces of information are properly recorded and submitted. The system enables issuance of claims up to £100,000 to all claimants who have an address in England or Wales (or a service address, if they live abroad) and have an e-mail address. The defendant must also live in England or Wales.

To file a claim, it is necessary to register on *Money Claim Online* and to pay a fee by credit or debit card. The claimant must submit a concise description of the claim, which is forwarded to the defendant. The claimant does not have to prove the evidence of the case. The system does not help the claimant to assess the validity of the claim. The system offers a platform to share the description of the claim with the defendant. The site informs the claimant that, if the claim contains any untruthful statements, he/she can be prosecuted. Once submitted, claims are managed by a bulk-processing center in Northampton, which prints out the claim description and sends it to the defendants in the name of Northampton County Court.

The defendant receives the claim package containing the claim description, the associated request of money, and all the needed information to respond to the claim. The defendant has 14 days to respond to the claim once it is served, which is five days after the Northampton County Court posted the claim. If the defendant ignores the claim, the claimant can lodge a request for judgment on the online system and even petition the court to enforce the claim immediately by sending the bailiffs to collect the payment. The defendant can respond acknowledging the request and paying it in full; admit he/she owes all the money, but fail to offer payment; ask for time to pay; admit he/she owes some money, but not all of it; or deny the claim and even file a counter-claim.

The system supports few of the required actions to manage the progression or closure of the case.¹⁰ However, in some situations, the system does not support the needed action, and the party must write directly to the Northampton County Court, using specific paper-based forms, to ask the court to make a decision. MCOL does not directly impact the enforcement of the outcome.

Discussion: The development of MCOL is the result of a specific technological and institutional configuration. The pre-action protocols that forced the definition of standards and timetables for the conduct of cases before court proceedings was a key factor in the success of MCOL.

The design of MCOL was based on a precise logic: to reduce the court's workload by disintermediating the exchange of documents between the parties. The introduction of pre-action protocols increased the court workload. All the exchanges of documents the protocols introduced had to be mediated by courts. The claimant filed the case at the court office; the court filed the claim to the defendant, who filed his/her response to the court. The introduction of the pre-action protocols removed judges from the transaction, increased the number of cases resolved without a judge's direct involvement, but also increased the court's workload.

¹⁰ A detailed description of the options available and steps supported by the MCOL system are available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762843/mcol-user-guide-eng.pdf.

The design of MCOL followed the transactional processes that govern the exchange of documents between the parties as regulated by the pre-action protocols in money claims. The focus on the document flow, rather than on the decision-making process behind the resolution of the disputes, determined the success of the system. Indeed, the work of the court in handling the document flow did not add any value to the process. On the contrary, it had a negative impact on the overall performance of courts across the judicial services UK courts supported and provided. The design of MCOL drastically impacts the efficiency of the mechanism of dispute resolution and reduces the complexity that arises as consequence of the procedural transformation the pre-action protocols introduced. This creates a new techno-institutional context within which money claims can better be resolved without the direct intervention of judges.

MCOL has no role in enforcing the outcome of the dispute. If the defendant ignores or acknowledges the request and fails to pay the amount due, the claimant can request a county court judgment (CCJ) or a high court judgment. The judgment will be removed from the registry, if it is paid within one calendar month from the judgment date. This judgment will stay on the Register of Judgments, Orders, and Fines for six years. If the payment is made after one month from the judgment date, the judgment will be marked as satisfied in the registry.

In England, the Register of Judgments, Orders, and Fines is a fundamental resource to determine a person's credit history. A negative record in the Register of Judgments, Orders, and Fines has huge impact on banks and loan companies' decision about whether to grant credit or loans and the interest rate they will pay. Given the socio-institutional context of England, where approximately 61 percent of the population is in debt, MCOL can rely on the effect of court judgment as a self-enforcing mechanism to impose payment of the money owed.¹¹

The case highlights the importance of aligning the deployment of the technological architecture with the socio-institutional and economic context to fully support judicial action. The success of MCOL relies on enforcement mechanisms that are external to the judiciary and that have more stringent enforcement power than traditional law-based enforcement mechanisms. Moreover, MCOL enforces an automated CMS that strengthens the legal compliance of small claims procedures and hence reduces, or eliminates, the number of cases that are disputed because of procedural defects.

Lessons learned: The lessons learned from the case are helpful in identifying key factors that impact the successful deployment of e-filing systems in civil proceedings. These factors are related to institutional arrangements, path dependency, legal and technological aspects, and organizational complexity.

Institutional factors

- When a clear and well-defined legal framework exists, it is easier to successfully design and deploy a technological architecture that supports and automates the exchange of documents

¹¹ Data from the Office of National Statistics.

between courts and users. In this case, the existence of a pre-action protocol was a fundamental precondition for the successful deployment of an effective e-filing system.

- The transfer of the MCOL jurisdiction to the Northampton County Court centralized the processing of fixed money claims in a single independent institution. This reduced the cost of implementation and the complexity of the design and deployment of the system. It also guarantees that all money claims are managed using the same e-filing system and that it is not necessary to deploy a mixed procedure (paper and electronic) to accommodate different needs across courts.
- Political support played a fundamental role in the success of MCOL. Lord Woolf's report *Access to Justice* (1996) and the Parliament's response—the introduction of the pre-action protocol—were key factors that enabled MCOL.

Infrastructural preconditions

- Making Northampton County Court the sole court that manages money claims eliminated any institutional and technological path dependency.
- When planning the design of an e-justice application, any design undertaken to support a judicial function or office creates legacies and path dependencies that might impinge upon future development.
- Having only one court involved in the design and deployment of the systems drastically reduced problems associated with interoperability and technical skills.
- The development and deployment of interoperable systems across the criminal justice chain is a long-term undertaking that must consider the complexity of the existing architecture upon which it is built.
- The budget must take technical and intuitional complexities into account.

Law and technology

- The development and deployment of the e-filing systems need legislative support and often impose changes in the existing organization of courts.
- The case highlights that the institution of an ad hoc court is a great facilitator for the introduction of the e-filing system for money claims in England and Wales.
- The digitalization of filing is not merely a matter of technology architecture. It requires a substantial judicial reform that requires technological as well as legal innovations and commitments.

Organizational complexity

- The elimination of organizational interdependencies simplified the development and deployment of the e-filing system. Only one organization, the Northampton County Court, was involved in the project. It established centralized services to meet the needs of MCOL.
- These choices almost eliminated the problem of adapting the system to an existing organizational setting and, hence, the impacts of the existing organizational configuration on the design and deployment of the system. In this case, the organizational settings adapted themselves to the technological configuration. This was possible because, a new techno-institutional configuration was introduced.

2

Toolkit



2.1 Introduction

This paper proposes a methodology to assess the potential impact of different e-justice solutions on the performance of the judiciary. The methodology will provide a roadmap to determine which e-justice projects have the most potential to achieve the stated goals and identify the actions needed to achieve them. The proposed toolkit and methodology will help identify the most relevant aspects to assess the impact of ICT on judicial performances. Given the importance of contextual factors on the outcomes of ICT-mediated judicial reforms, the toolkit cannot be considered exhaustive; rather, it has general relevance and validity.

E-justice is a highly complex phenomenon that is involved in technological, social, and institutional processes at various levels and, crucially, in forms that are intertwined and hard to disentangle. For the purpose of this investigation, the authors have found relevant and useful to identify a set of fundamental judicial values that can help decision makers anticipate the impact of e-justice investments on the value e-justice reforms deliver.

For the scope of this investigation, the authors have found both reasonable and useful to make a distinction between four different judicial values: access, legality, legitimacy, and economy (Contini, 2017, p 11–12). The e-justice applications analyzed in this study are equally entwined with all the four judicial values.

From the standpoint of this work, values are the regulative principles establishing the proper conditions for judicial action. Academic analysis and policy debates on judicial reform focus on the values of efficiency, timeliness, predictability of judgments, independence, integrity, and fairness. Missions, strategic plans, and agendas of courts and judiciaries all mention lists of “core values”. Values also permeate international judicial standards. The Universal Declaration of Human

Rights¹² underscores the importance of equality before the law, presumption of innocence, and the right to a fair and public hearing held by a competent, independent, and impartial tribunal established by law as fundamental requirements of proper judicial action. The Covenant on Civil and Political Rights further guarantees the right to be tried without undue delay (timeliness).¹³ The Bangalore Principles on judicial conduct identify six core values of the judiciary: independence, impartiality, integrity, propriety, equality, competence, and diligence.

The definition of the relevant values to be pursued by the judiciary is not only relevant to frame the proper conditions for judicial action. Values are also at the root of every evaluation framework (Contini and Mohr, 2008). Evaluating the quality of a judicial system implies an assessment of the features of the services delivered by judicial institutions against the values they promote and enforce. Every approach to evaluation should therefore consider the values embedded in the judicial system and guide the process of service delivery to best convey those values. By extension, an evaluation of the impact of ICTs on the quality of justice entails an analysis of the values that guide courts and judicial behaviors and the direct and indirect impact of ICTs on these values. To provide a comprehensive framework to assess these impacts, it is crucial to focus on the interaction between the technological, organizational, and institutional dimensions that shape the outcome of e-justice reforms.



2.2 An Analytical Toolkit

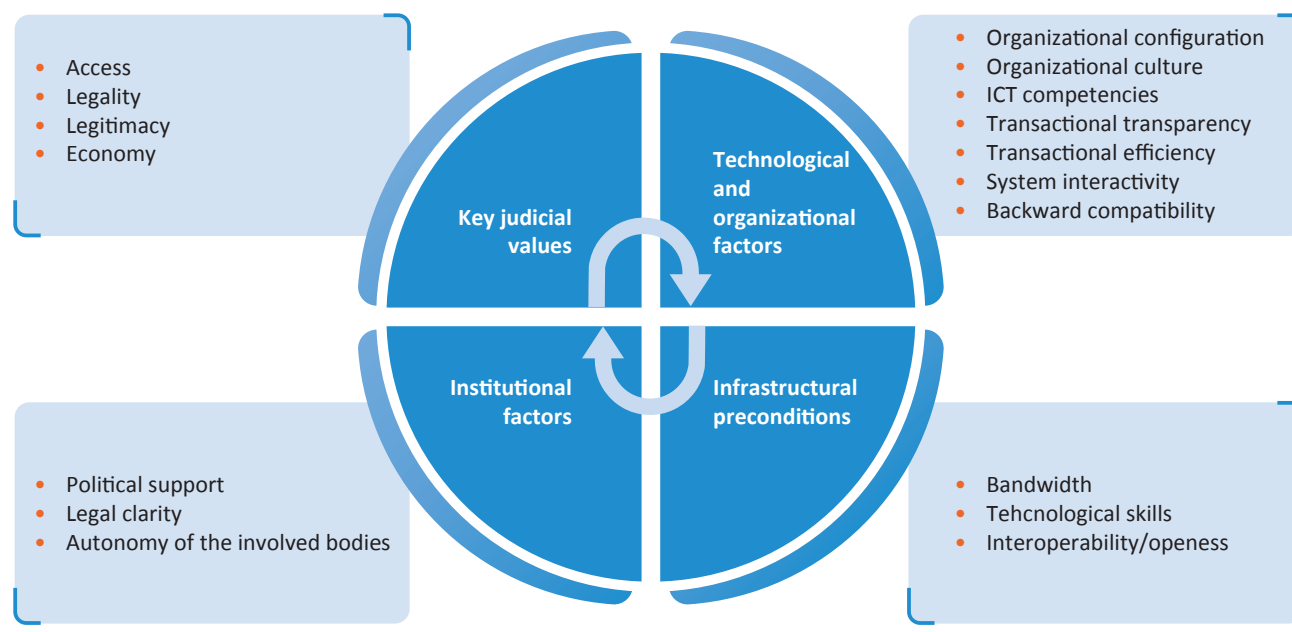
An effective justice system is accessible to users, resolves disputes based on principles of legality and economy, and is considered legitimate in the eyes of the citizens. The toolkit proposed here first identifies a set of indicators for fundamental judicial values affected or to be affected by e-justice initiative. The typology of values is meant to be sufficiently general to support an inclusive search for potential impacts, yet specific enough to guide policymakers (Figure 14).

This first step is intended to help decision makers anticipate the impact of e-justice investments on the values the judiciary upholds. The decision maker, looking at the values that need to be upheld or improved in a given system has to determine which technological application will achieve the expected goals. However, technological developments are not independent from technological, organizational, and institutional dimensions. Therefore, the toolkit identifies and discusses the organizational and technological features, institutional factors, and infrastructural preconditions that interact with the development of e-justice.

The implementation of technological features requires the existence or establishment of specific institutional factors and infrastructural preconditions. It also requires political support, judicial clarity, and accountability. Moreover, specific infrastructural preconditions are necessary to enable the technological requirements of the different technologies the authors considered. Finally, the technological features of the deployed systems are important dimensions to fully acquaint for the nature

¹² <http://www.un.org/en/universal-declaration-human-rights/>.

¹³ <https://rm.coe.int/16807482c6>.

FIGURE 14. Components of the Toolkit

of the transformations associated with the deployment. The toolkit enables decision makers to map and navigate the key factors to be considered when assessing the feasibility of a given project. It also provides a general framework to assess the impact of ICT-mediated judicial reforms and a methodology for decision makers. Finally, it is applied to the specific e-justice technologies analyzed in this paper.

Key Judicial Values

Access

Access comprises the factors that regulate the processes by which litigants and legal professionals interact with the judicial system. Access to justice can be measured by looking at three factors: court fees, complexity to initiate a procedure, and the right to appeal. The cost of initiating and pursuing a case is a fundamental factor that determines access to justice. Fees must be set so that all those who have the right to pursue a case can do so regardless of their personal wealth. The complexity of the processes that must be undertaken to start and pursue a proceeding is also a determining factor to define access to justice. If initiating or pursuing a proceeding is extremely complicated and cumbersome, access to justice is limited. The right to appeal is also an important aspect of access to justice, as it provides recourse to those who do not believe that justice was served in the first instance.

Legitimacy

The social legitimacy of the judiciary is the respect and trust citizens and court users grant to the justice system and its decisions. It has an external and an internal dimension. External legitimacy reflects

citizens' trust citizens in judicial institutions. It is generally measured through national or regional surveys, such as Eurostat (TNS Political & Social, 2013) carried out in Europe. Social media, media publications, and the political debate can also be used to measure public trust in the justice system. However, since few of citizens have direct personal experience with the justice system, citizens' assessment is influenced by the media or built on second-hand information.

The internal dimension of legitimacy entails court users' (e.g., case parties and witnesses) assessment of the fairness of the procedure, the impartiality of the adjudicator, and the clarity of judgments and procedures. This dimension is measured through court user surveys, such as that of the Center for Court Innovation (LaGratta and Jensen, 2015).

Legality

Every judicial action should be executed following specific legal prescriptions. The actions of the judiciary and law enforcement agencies should be in accordance with rule of law. The legality of judicial operations is determined by their level of compliance with the specific and contingent legal frameworks. The actions should be fair and ethical. The decisions should be enforced effectively to guarantee respect for the law and of the ruling in the name of the law. Ideally, the ruling will be predictable because it will be prescribed by the rule of the law. Judicial independence, impartiality, and integrity are essential preconditions to guarantee the legality of judicial proceedings.

Economy

Economy of the judiciary ensures that the judiciary has the resources to continue to pursue its activities. Efficiency and effectiveness of the use of resources are key determinants of economy. To measure economy, it is important to analyze the budget, the allocation of resources, and the results reached with their use. Transparency and accountability are also key dimensions: it is important to look at the traceability of decisions about the allocation of resources, their use, and the time period in which they are used. Finally, the pace at which procedures and cases are managed is an indicator of economy. The impacts of e-justice on the four judicial values are defined by value generating mechanisms that are intrinsic to specific technological features, infrastructural preconditions, and institutional factors.

Infrastructural Preconditions

Bandwidth

Many e-justice systems rely on data exchange flows over the Internet or dedicated networks. Thus, the characteristics and reliability of network capacity are fundamental for the functioning of many e-justice systems. It is important to assess bandwidth (measured in GBits) and the characteristics of the network, and its security and reliability in relation to the requirements of the e-justice system.

Technology-related Skills

The presence of the skills and competencies needed to support the design, deployment, and use of the e-justice solution is a prerequisite for a successful e-justice project. This must be measured at a tribunal, court, and/or ministry of justice level, based on the nature and scope of the project. Skills and competencies include both professional technological capabilities and general user capabilities. The former refers to the specific ICT skills of the organization or institution designing and

implementing the e-justice system. The latter refer to competencies and skills of the judicial personnel using the system. The availability of skills and competencies can be measured by the number of technical personnel available in the organization and their technical knowledge. The users' skills and competencies refer to individual users' acquaintance with digital technology in general and specific judicial systems in particular.

Interoperability and Openness

Interoperability among systems is fundamental when e-justice projects rely upon a complex network of technological systems. A preexisting open infrastructure facilitates the success of an ICT-based service, and thus increases its integration with other systems to facilitate data sharing and operational coordination. This can be assessed by looking at the nature of the technical standards in use, and the presence of gateways or ad hoc integration solutions. Interoperability captures a technical aspect of infrastructure. It can be assessed by looking at the technical components of the systems and the necessary adaptations. Infrastructures can be classified as: open infrastructure with no need for adaptation; semi-open infrastructure that can be rendered compatible through the development of gateways; closure and lock-in with no immediate possibility for an interoperable infrastructure. The presence of a national or regional e-government framework for e-government developments also facilitates the development of an integrated and interoperable system across the judiciary.

Technological and Organizational Factors

Organizational Arrangements

The organization of a judicial office is arranged around judges and court clerks. The former mainly operate as independent, autonomous agents, the latter within bureaucratic arrangements. The organizational arrangement of the judiciary is shaped by the way in which the two groups coordinate and collaborate.

First, it is important to identify whether administrative services are offered in a centralized or a decentralized context. In the first case, registries and clerks of the court work as a classical bureaucracy, providing standard common services, and support to all judges or prosecutors. With the decentralized arrangement, staff (secretary and administrative units) are assigned to each judge or prosecutor and works as personal support staff.

The level of centralization affects the ability to standardize procedures and defines the challenges of ICT design and implementation. ICTs require and bring into judicial operation a high level of standardization that can create tensions and conflicts when the organizational arrangement is decentralized. This key organizational variable can be easily assessed by looking at the organizational charts of the offices involved in the innovation process, and may suggest coupling technological and organizational reform, or limiting innovation to areas that are more standardized.

Organizational Culture

Leading studies have identified four types of court culture: communal (judges and managers emphasize the importance of acting collectively), networked (emphasis on establishing a collaborative

work environment), autonomous (emphasis on the importance of allowing judges wide discretion to conduct business), and hierarchical (focused on setting rules and procedures to meet clearly stated court-wide objectives). These four types have a profound effect on e-justice projects. The degree of procedural standardization that the e-justice solution requires may easily enter in conflict with the culture of autonomy that is still the dominant court culture in many countries. Communal, networked, and hierarchical cultures, which emphasize the unity of the court, are more suitable to meet the requirements of the development of e-justice, but also less frequent. Court culture can be assessed through various means, such as surveys and observations during the feasibility study (Ostrom et al., 2007).

Workflow Efficiency

Workflow efficiency is one of the key variables affecting court performance. When workflows and procedures are made digital, they must also be made consistent and compliant with the legal framework. The cost of transformation and the efficiency of the digitally redesigned workflow depend on its compliance with the existing legal framework. To measure the improvement of the digital workflow versus a paper-based system, it is important to measure the efficacy and legal compliance of the processes.

Information System Transparency

While transparency seems an automatic consequence of the digitization of court proceedings, recent studies point to a different assessment (Contini and Lanzara, 2018). The internal operations of e-justice applications, such as forms to calculate alimony, hide the process from the user. This can make it difficult to discover errors or unexpected negative outcomes. It is important to evaluate the transparency and clarity of digitally mediated actions to allow the judiciary to maintain their proper and effective functioning. For example, in the case of artificial intelligence solution, who monitors the fairness, legal compliance, and accuracy of the decisions taken by the algorithm?

Backward and Forward Compatibility

Backward compatibility refers to the capacity of the new system to be interoperable and compatible with the standards and requirements of preexisting technologies or paper-based workflow management systems. Forward compatibility is the ability of the system to adapt to future developments and integration with other platform or systems. The analysis of backward and forward compatibility should focus on technical standards and architectural specifications. Open standards or Application Programming Interface (API) architectures are good indicators of backward and forward compatibility.

Institutional Conditions

Legal Readiness

The deployment of e-justice solutions occurs within the existing legal framework. This framework provides the primal scaffold for the design and administration of the e-justice project. The legal framework is the result of multiple reforms occurred across a long-time span. In most cases, the legal framework arose in a context of paper-based procedures and face-to-face interactions.

Consequently, existing rules regarding signature, stamps, archiving of data, and documents may be incompatible with ICT-based solutions. The analysis of the legal compatibility of the e-justice sequences of action and requirements with the existing framework is needed. Moreover, an accurate analysis of the legal readiness may help identify minor changes to the existing framework that can profoundly simplify the technological design, development, and implementation, and the associated costs.

Legal Clarity

A clear legal framework is needed to facilitate the design and deployment of effective and functional e-justice solutions. It simplifies the design process and increases the internal and external accountability of the system to judicial institutions and to society in general. To assess the extent of legal clarity and to identify gaps or grey areas, it is necessary to examine procedural codes and administrative frameworks of the judiciary. The assessment of legal clarity should take account of the laws and regulations that govern inter- and intra-judicial boundaries and interdependencies. The laws and regulations provide the fundamental sources to assess potential compliance of the e-justice systems with the institutional and normative framework.

Autonomy of the Institutions Involved

The implementation of technological solutions may require the collaboration of various judicial organizations (e.g., ministry of justice, judicial council, courts, bar associations, PPOs, police, prisons, and other public agencies). In most cases, these institutions are independent, are supported by different constituencies, and have different interest, structures, and priorities. The identification of the institutions involved in the project, the assessment of their interdependencies, and the proper consideration of each institutions' potential costs and benefits must be undertaken to determine the project's feasibility and identify the associated risks.

Political Support and Commitment

The political context within which e-justice systems are deployed is extremely important to determine the roles and functions associated with e-justice initiatives. Political support and commitment are expressed in the government's justice policies and in the public debate on the role, functions, and future of the judiciary. To assess political support for the government's justice policies, the analysis should look at the actual state of the judiciary and the specific issues addressed in the public and political debate in this regard (e.g., analysis of social media, media publications, and judicial framework and legislation).

Levels of Leadership

The toolkit stresses the importance of having leaders at all the different levels affected by the e-justice project. While small-scale projects may require leaders just at the court (or PPO) level, more ambitious projects need leaders at the national level, while others may require leaders capable of winning the support of legislators. Too often, such projects focus on the technological aspects while neglecting the need for support at a higher level of the judicial system and even changes in the legal framework. To analyze the level of leadership, it is necessary to determine who oversees the project and which organizational or institutional level it impacts.



2.3 Methodological Framework

The outcome of e-justice projects is the combination of several interdependent factors. E-justice initiatives involve a cluster of institutional and technological interventions whose goals should be aligned with the judicial values on which the initiative aims to impact. The toolkit and methodology presented here include the factors that must be considered to decide whether an ICT project is likely to improve the judiciary's performance.

These factors and features are of general relevance and validity and cannot be considered exhaustive. For example, backward compatibility is a general requirement for the effective deployment of most e-justice systems. However, in some cases, this is not a relevant factor. In the Netherlands, for example, the new CMS for PPOs and courts was developed without considering the possibility of migrating data from the old to the new system. The trade-off has been a simplification in system development, against the need to work for years with two distinct CMS.

First, it is important to determine the unique infrastructural, institutional, and technological factors that are most relevant for the change targeted by each project, and the weight to be assigned to each. Each project will have particular or unique requirements to target and deliver the planned outcomes. The weight to be assigned to each factor may well vary across projects, domain, nations, and different situations and contexts. Specialists using the methodology will have to be purposeful, in order to find the right configuration of the specific indicators that are relevant for the project and the existing contextual and national conditions with which they are dealing. It is not possible to identify universal and context-independent relationships to assess the specific interactions of institutional, infrastructural, organizational, and technological factors and judicial values, unless one accepts a simplified analysis of the impact of ICT on reforms in the public sector, such as those captured by e-government indexes. The relative significance of the three categories of factors and the relevance of the four judicial values vary according to the context and the specific characteristics and functions of the e-justice system. For example, case tracking systems can have similar a path of development and face similar challenges across different countries and judicial systems, but such similarities fade away in the cases of systems that require more cross-functional interferences and interoperability, such as integrated judicial systems.

The methodology begins with a feasibility study to analyze and determine the factors that must be considered and the conditions that must be met to deliver a specific e-justice project. Step 1 is to identify the project's goals, based on the judicial values it aims to impact. Step 2 is to investigate and identify the institutional factors involved in the delivery of the selected judicial values and their role in shaping the impact of ICTs on judicial values. The methodology suggests a set of indicators to be assessed and directs to the relevant techniques or measures for these assessments. Once the main institutional factors have been considered to establish compatibility with the desired reforms, step 3 is to identify and verify the infrastructural preconditions. These preconditions determine the technological background upon which the project will deploy. At this point, qualitative measurements are possible to identify tangible requirements, such as the existing bandwidth infrastructure.

Institutional factors and technological preconditions are also fundamental dimensions to be analyzed to establish the characteristics of the context that enable or hinder the successful development of the project. The purpose is to establish the importance of these background factors for the potential development of the e-justice project, so to assess the feasibility of the project and the specific obstacles that must be overcome. Thus, step 4 is to identify institutional factors, specifically, to establish whether the agency in charge of the ICT-mediated service is capable of sustaining the organizational changes, and the technological development that will be compatible with judicial values identified in step 1. The result of this step is a list of organizational and technological factors, the analysis of their specificities, and an estimate of the available resources and changes needed to implement the project. For example, if an agency's organizational configuration does not accommodate an ICT redesign workflow, the analyst will need to estimate the cost and likelihood of success of an intervention to redesign organizational processes and working conditions to enable the processes of the new ICT-mediated work flow to be effective. Similarly, if the organization does not have adequate in-house ICT competencies, the analyst will need to assess the option of outsourcing or the effort required to develop the capacity to manage outsourced projects and relationships with software development vendors. Finally, the methodology includes an overall assessment of the potential of a project to achieve its stated goals. This involves a judgment of the relative significance of all the conditions and factors analyzed using the toolkit, and an analysis of the impact of their interdependence on the e-justice initiative with respect to their intended impact on the judicial values targeted.



2.4 Using the Toolkit

The methodology contains a map for each technology to help analysts navigate the design and assessment of e-justice projects and thus operationalize the proposed toolkit. For each indicator, the tool pre-mapped the potential impacts. The symbol (++) means a clear positive impact; (--) indicates a clear negative impact. The symbol (+) means positive impact; the symbol (−) negative impact. Marginal or neutral impacts are discussed and explained in the tables. Obviously, this tool should only be used as a guide and does not have predictive value. It offers a general benchmark to guide the analysis and assessment of the impacts of e-justice projects

The toolkit also proposes a set of questions to ask key stakeholders to collect the necessary information to assess the requirements of a specific e-justice system. The questions are designed to help decision makers better frame project design and deployment choices to meet the identified requirements.

The toolkit indicates the stakeholder to whom the questions should be asked. This input is meant as a general suggestion, since governance and stakeholders vary among countries. For example, in a centralized system, a large share of information is collected at the central level (e.g., ministry or council), while in a decentralized system more information is collected at the court or PPO level. The key stakeholders are policymakers, including heads of units within the MoJ and the council (PM); lawyers (L); non-professional court users, such as case parties, victims, and witnesses (CU); IT experts (IT); and academics or external experts (A). Taking into account professional

groups working within courts and PPOs, the toolkit includes judges or public prosecutors (JP); judicial inspectors (JI), court managers (CM); court presidents or chief prosecutors (CP); and court or prosecutors' staff (CS). Based on the technologies to be assessed with the toolkit, questions are addressed to courts, PPOs representatives, or both, depending on which organizations are involved in e-justice development.

TABLE 2. Using the Toolkit: Case Tracking Systems

Case tracking systems		
Values impacted	Description	Assessment questions and respondents
Access	CTSs facilitate access to case-related information relevant to case parties and lawyers (+).	<ul style="list-style-type: none"> How many procedural steps are needed to access case-related information? (L, CU, CS) How many organizational units should be contacted to get access to case-related information? (L, CU, CS) How many administrative processes are needed to get access to case-related information? (L, CU, CS)
Legality	Data recording is more accurate; decisions are better supported by the needed evidence (+).	<ul style="list-style-type: none"> How many cases required data corrections? (CM) What pieces of evidence are needed to support courts' decisions? (L, CS) How many critical observations did judicial inspectors make? (JI) Are case files available, reliable, and complete? (CM, JI) How long does it take to collect relevant case information? (CS, L)
Legitimacy	Courts work with digital registries. Decisions are better informed and supported by accurate registry entries. Sign of modernization (+).	<ul style="list-style-type: none"> Court user survey. (CU, L) How is easy to find the needed data? (CU, L) Are the searched data available? (CU, L) Are the data up to date? (CU, L, CM) Are the recorded data correct? (CU, L, CM)
Economy	Savings in data entry and recording costs (+).	<ul style="list-style-type: none"> How much is saved in data entry and recording costs? (CM)
Overall assessment	The positive effects produce moderate overall impacts on judicial values.	
Infrastructural preconditions	Description	Assessment questions and respondents
Bandwidth	Not relevant if the systems architectures are decentralized. Extremely relevant if they are centralized and based on networked or cloud-based architectures (++).	<ul style="list-style-type: none"> What is the bandwidth the CTS require? (IT) What is the effective available bandwidth? (IT) Is the bandwidth scalable? (IT)
Technology-related skills	They can be quite relevant since CTSs are typically the first technology implemented and deployed in courts and PPOs (+). If they are not the first step of implementation, technology-related skills might be already present.	<ul style="list-style-type: none"> Are technology related competences and skills sourced from third parties? (CM, PM) Has the assessment of training needs been made? (PM, CM) How many hours of training were/are available per person involved in the use of the new system? (PM, CM)
Interoperability and openness	Generally, these systems are neither interoperable nor open. However, when integrated with CMS interoperability and openness, this becomes very relevant (++).	<ul style="list-style-type: none"> What are the technical characteristics of technical data standards and architectural gateways? (IT) What is required to guarantee the needed interoperability? (IT)

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TABLE 2. Using the Toolkit: Case Tracking Systems *(continued)*

Case tracking systems		
Overall assessment	Infrastructure preconditions are now very relevant.	
Technological and organizational factors	Description	Assessment questions and respondents
Organizational arrangements	Decentralized court configurations can make technological deployment problematic (– –); centralized court configurations are beneficial for the successful deployment of CTSs (++).	<ul style="list-style-type: none"> What is the configuration of the organization of courts' offices? (CM, CP, PM) What are the organizational and institutional interdependences? (CM, CP, PM)
Organizational culture	A sound centralized hierarchical culture facilitates the deployment of CMS (++) . An autonomous culture, which builds on preferential relationships between individual judges and groups of clerks, hinders the deployment of CTSs (– –).	<p>Analysis of indicators such as:</p> <ul style="list-style-type: none"> What is the degree of control of individual judges on organization processes and the timing of key procedural events? (JP) What is the degree of ownership of judicial procedures by individual judges? (JP) Are there any attempts to improve court-wide performance? (CM, CP, PM) Is there any mechanism in place to ensure continuity with past processes? (A, PM) What is the role of court leaders in establishing uniform procedures and policies? (CP, PM) Are there any explicit lines of authority among judges and court staff? (CM, CP; CS) <p>For a more detailed assessment, see Ostrom et al. (2007).</p>
Workflow efficiency	Efficient and well-structured workflows positively impact the design and deployment of CTSs (++) .	<ul style="list-style-type: none"> What are the formal and informal workflows? (CS, JP)
Information system transparency	The procedural nature of CTSs requires sufficient technological transparency to map the accuracy of the workflow against the existing legal and procedural frameworks (+).	<ul style="list-style-type: none"> Which operations are digitized? (IT) Are the digitized operations properly traceable? (IT) How do the traced digital operations perform against the legal framework? (IT, CS, JP, CM)
Backward and forward compatibility	Backward compatibility is not relevant. CTSs are built to automate preexisting paper registries. Forward compatibility is relevant because CTSs should be designed as first step toward the development of more comprehensive CMS (++) .	<ul style="list-style-type: none"> What are the technical data standards and architectural standards? (IT) What are the future interoperability needs? (IT, PM) How open are the standards and technical architectures? (IT, PM) To what degree are the architectures dependent on proprietary standards? (IT, PM) Are there national e-government standards? (IT, PM)

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TABLE 2. Using the Toolkit: Case Tracking Systems *(continued)*

Case tracking systems		
Overall assessment	The technological factors to be considered are quite limited, making their development not too complicated. Organizational factors are of limited relevance in the shaping of the design and deployment of CTSs. Forward compatibility is very important.	
Institutional conditions	Description	Assessment questions and respondents
Legal readiness	In most cases, it is not relevant if online and offline systems coexist. However, if the CTS substitutes existing paper registries, the necessary legal changes must be made (+).	<ul style="list-style-type: none"> Does the CTS comply with the existing legal framework? (CS, CM, CP, PM) What changes are needed to facilitate compatibility between the legal system and the CTS? (CS, CM, PM) Is it possible to make these changes? (PM)
Legal clarity	Not a relevant issue with CTSs.	<ul style="list-style-type: none"> Not relevant.
Autonomy of the institutions involved	Not a relevant issue. CTSs do not require interoperability among agencies.	<ul style="list-style-type: none"> Not relevant.
Political support and commitment	Limited support and commitment are sufficient if changes the legal framework are not needed.	<ul style="list-style-type: none"> Analysis of documents (transcripts of parliamentary sessions or parliamentary commission session) and media reports to identify political disposition toward the CTS. (A) Do strategic or policy documents of courts and judiciary address the problems and challenges associated with the introduction of CTSs? (PM, A) What is the reaction to the introduction of CTSs into social media? Is there any indication of willingness to make (if any) the required changes in the legal system to support and facilitate the introduction of the CTS? (PM)
Levels of leadership	Leadership is needed at court level where the technology is deployed. If legal changes are required, leadership will facilitate the deployment of the system (+).	<ul style="list-style-type: none"> Interviews in courts and tribunals to identify the nature of the leadership involved in the project. (CS, CM, CP) Who oversees the project? (PM) Is there any difference between formal and informal leadership? (CS, CM, CP) What is the nature of the support provided by the leadership to the CTS? (CS, CM, CP)
Overall assessment	Institutional preconditions are not particularly demanding, since the CTS is mainly an automation of preexisting paper dockets.	

TABLE 3. Using the Toolkit: Case Management Systems

Case management systems		
Judicial values	Description	Assessment questions and respondents
Access	<p>Same impacts as CTSSs, plus:</p> <ul style="list-style-type: none"> • They can provide public access interfaces that eliminate the need to go to court to collect case-related information (++). 	<ul style="list-style-type: none"> • Is there an open interface for remote information collection (public access to case-related data)? (IT, L, CU) • How many times did external users access the pages with case-related data? (CM; PM)
Legality	<p>Same impacts as CTSSs, plus:</p> <ul style="list-style-type: none"> • Improved procedural consistency with the legal framework (++). • Random case assignment systems improve judicial integrity and promote equal workload among judicial officers (++). 	<ul style="list-style-type: none"> • Are case-related data collected by the CMS reliable? (CS, CM) • Are rules of the code of procedure coherently written (formalized) into CMS workflow and data sets? (CS, CM, IT) • How are the digital procedures formalized in accordance with procedural law? (CS, CM, IT) • Is there a system for automatic case assignment? (CS, CM, IT) • How does the case assignment algorithm work? (IT, CS, JP)
Economy	<p>Same impacts as CTSSs, plus:</p> <ul style="list-style-type: none"> • Procedural uniformity improves efficiency (++). • CM policies inscribed into CMSs improve timeliness and efficiency (++). • More accurate and reliable data increase court management efficiency. • More data also improve resource allocation, court monitoring, and early intervention in critical situations (++). <p>The impact depends on the quality of the court management tools (+/+++).</p>	<ul style="list-style-type: none"> • How long does it take to define a civil/criminal case? (CM, PM) • How many cases per month did judicial officers/clerks manage before and after the introduction of the CMS? (CM, PM) • What is the cost of managing a case once the CMS is introduced? (CM, PM) • How do the cost and timeliness of automated procedures the CMS supports compare to off-line procedures? (CM, PM) • How long does it take to undertake different managerial processes using the tools the CMS provides? (CM, PM) • How many person-hours does the introduction of the CMS save in the court work? (CM, PM) • How many critical interventions were taken once the CMS was introduced? (IT, CM, PM) • Does the CMS reduce the time of critical interventions? (CM, PM) • SATURN-CEPEJ has established a full set of indicators to assess timelines and economy of judicial procedures available at https://www.coe.int/en/web/cepej/cepej-work/saturn-centre-for-judicial-time-management.

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TABLE 3. Using the Toolkit: Case Management Systems *(continued)*

Case management systems		
Legitimacy	<p>Same impacts as CTs, plus:</p> <ul style="list-style-type: none"> • CMSs lead to a reduction of time to disposition inscribing CM policies into CMS. • CMSs improve transparency and procedural uniformity. • Legitimacy may increase (+) as a result of improved legality and economy. 	<ul style="list-style-type: none"> • Which CM policies are written into CMS? (JP, CS, CP) • How is the data flow structured in the CMS? (JP, CS, CP) • Are there any surveys to assess the trust and legitimacy of the judicial institutions? (PM, CM) • Courttools: The survey to assess the fairness of judicial system (strictly correlated with the legitimacy of the system) can be downloaded at http://www.courttools.org/Trial-Court-Performance-Measures.aspx.
Overall assessment	<p>Improvements in relevant domains are subject to proper design and implementation of the technology and of its modules (i.e., public access and court management).</p> <p>Data consistency is improved.</p>	
Infrastructural preconditions	Description	Assessment questions and respondents
Bandwidth	<p>It is relevant when the CMS is based on a centralized architecture (as in most cases). Bandwidth has a positive impact on architectural choices (++)</p>	<ul style="list-style-type: none"> • What is the bandwidth required by the CMS? (IT) • How much effective bandwidth is available? (IT) • Is the bandwidth scalable? (IT) • Is the bandwidth reliable? (IT)
Technology-related skills	<p>The importance of technology-related skills is relevant and often underestimated.</p> <p>The presence of ICT-related skills is a fundamental precondition (+++).</p> <p>The use of a CMS requires different skills than the ones used with paper registries. Dedicated training (++) is needed to develop the required skills.</p>	<ul style="list-style-type: none"> • Are there previous experiences in using ICT for court operations? (IT, CM, CS) • Have training needs been assessed? (PM, CM) • How many hours of training were/are available per user of the new system? (PM, CM) • Are there any alternative practices in place to bypass the CMS? (PM, CM, JP)
Interoperability and openness	<p>CMSs are the backbone of justice systems. Interoperability is a core component to integrate the justice system and external agencies (+) (e.g., tax, police, and social security).</p> <p>The presence of national e-government standards would facilitate further development and future interoperability (++)</p>	<ul style="list-style-type: none"> • What are the technical characteristics of data standards and architectural gateways? (IT) • Are the standards open or proprietary? (IT) • Are data standards and architectural gateways compatible with the requirements of a CMS? (IT) • What changes are needed to create the desired interoperability? (IT, PM) • Are there national e-government standards? (IT) • Are the national e-government standards useful to simplify the design and deployment of a CMS? (IT)

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TABLE 3. Using the Toolkit: Case Management Systems *(continued)*

Case management systems		
<p>Overall assessment</p> <p>Technological and Organizational Factors</p> <p>Infrastructure preconditions affect the architecture of the system as well as its future evolution. If the preconditions are met, the impact is very positive (++/+++), while, if they are not met, they can hamper project development (- -/- - -).</p>		
Overall assessment	Description	Assessment questions and respondents
Organizational arrangements	<p>The higher the degree of procedural standardization of the organizations involved, the easier the design and development of a CMS will be (+++). A decentralized court organization can make technological deployment problematic.</p> <p>The adoption of CMSs enables the deployment of a back-office/front-office model.</p> <p>CMSs require high levels of procedural standardization. Standardization is also required in data entry and procedures.</p>	<ul style="list-style-type: none"> What is the degree of procedural standardization in courts and PPOs and across the country? (CS, CM, PM, A, L) Are common procedural standards in place, or does each court and PPO adopt different procedures? (CM, PM, A, L) Are court procedures standardized within a court and PPO or are there differences (among chambers, judges or prosecutors)? (CS, CM, PM, A, L) What are the common standards across courts and PPOs? (CS, CM, PM, A, L) Are there national procedural standards? (PM, A, L) Are the national procedural standards compatible with the CMS requirements? (CM, PM, IT) Are there formal or informal back-office/front-office coordination mechanisms? (CS, CM) Does the CMS help to support back-office/front-office coordination? (CS, CM)
Organizational culture	<p>Judges and prosecutors can use a limited set of the functionalities offered by CMS (i.e., case assignment, calendaring, and statistical reporting).</p> <p>Organizational culture affects judges' use of the system.</p> <p>A sound centralized hierarchical culture facilitates the deployment of CMS (+).</p> <p>An autonomous culture that leads to inconsistent procedures makes the design and deployment of CMS more complex (-).</p> <p>Given the limited involvement of judges and prosecutors, this is not a critical factor for successful CMS deployments.</p>	<ul style="list-style-type: none"> How much control do individual judges have on the organization of procedures and the timing of key procedural events? (JP) What is the degree of ownership of judicial procedures by individual judges? (JP) Is there a focus on tasks to improve court-wide performance? (CM, CP, PM) Do judges and staff emphasize the importance of maintaining continuity with the past? (JP) Is the court leader playing a strong role in establishing uniform procedures and policies? (JP, CP, A, PM) Are there any explicit lines of authority among judges and court staff? (CM, CP, CS) <p>For a more detailed assessment, see Ostrom et al. (2007).</p>

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TABLE 3. Using the Toolkit: Case Management Systems *(continued)*

Case management systems		
Workflow efficiency	<p>A well-designed CMS should consider preexisting workflows and improve their efficiency (++). The assessment of the courts and PPOs workflows, including data, documents, tasks, and roles, is a key component of the design exercise.</p> <p>Writing CM policies into the CMS is an essential part of the design effort (+++).</p>	<ul style="list-style-type: none"> • What are the formal and informal workflows? (CS, JP) • Are there bottlenecks that can reduce the efficiency of the systems? (CS, CM, JP) • Are there tasks or workflow processes that can be eliminated or improved with the development of CMS? (CS, CM, JP) • Which CM policies are written into the CMS? (JP, CS, CP) • How many types of procedures (e.g., civil, administrative, and criminal) are standardized and framed into the CMS? (CM, PM, IT)
Information system transparency	<p>The high number of operations carried out autonomously by CMS can make it difficult to understand how different users process data (–).</p> <p>Software developers and policymakers must ensure that information is treated according to the relevant legal framework, to prevent legal challenges to the system (+).</p>	<ul style="list-style-type: none"> • What are the automated operations? (IT) • Are they properly traceable? (IT) • How do the traced digital operations benchmark against the legal framework? (IT, CS, JP, CM) • How does the system guarantee the proper information transparency? (IT, CS, JP, CM) • Are system logs and system log analyzers built into the system? (IT)
Backward and forward compatibility	<p>Backward compatibility is relevant when data must be imported from preexisting systems (+).</p> <p>CMSs should be designed as the backbone of the civil and criminal justice system and provide gateways and interfaces with other systems. Forward compatibility is a relevant issue (++).</p> <p>The availability and adoption of existing e-government standards facilitates forward compatibility (++).</p>	<ul style="list-style-type: none"> • What are the technical data standards and architectural standards? (IT) • What are the future interoperability needs? (IT, PM) • How open are the standards and technical architectures? (IT, PM) • To what degree are the architectures dependent on proprietary standards? (IT, PM) • Are there national e-government standards? (IT, PM)
Overall assessment	<p>Technological and organizational factors affect CMS deployment in several ways. A careful assessment of all dimensions is essential to anticipate problems and identify possible solutions. Some of the factors the authors discussed can halt the project; others can weaken the impact on the above-mentioned values, while others will generate obstacles to future developments.</p>	
Institutional conditions	Description	Assessment questions and respondents
Legal readiness	<p>The legal framework must be compatible with the requirements of digital registration and data exchange. The existing legal framework must support the new roles established for the proper functioning of databases (systems manager, data supervisor, data owner, etc.) as well as privacy settings.</p> <p>Legal readiness is required (+++).</p> <p>A non-compatible legal framework may lead to delays the innovation process (– –).</p>	<ul style="list-style-type: none"> • Does the digital CMS comply with the existing legal framework? (CS, CM, CP, PM) • Given the existing legal framework, is it possible to eliminate paper registry and digitize registration? (CS, CM, PM) • What changes are necessary to facilitate compatibility between the legal system and the CMS? (CS, CM, PM) • Can the changes be made easily given the existing legal framework? (PM)

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TABLE 3. Using the Toolkit: Case Management Systems *(continued)*

Case management systems		
Legal clarity	<p>Legal clarity is a prerequisite, since it is needed to transform the procedures established in the legal code into streamlined and structured workflows (++).</p> <p>A different interpretation of the law may result in uncertainty, with negative impacts on the system design and development (– –).</p>	<ul style="list-style-type: none"> • Are the legal procedures clearly defined? (CS, JP, CP, PM, L) • Which legal procedures are open to interpretation (i.e., less standardized across the courts/PPOs)? (CP, PM L) • Is there agreement on the interpretation of the legal procedures? (CP, CM, L) • What measures can be taken to create consensus on procedures and workflow? (CP, CM, L)
Autonomy of the institutions involved	<p>The autonomy of the institution involved is not relevant when CMSs are not interoperable. Autonomy becomes relevant when CMSs must be made interoperable (– –).</p>	<ul style="list-style-type: none"> • Does the CMS require interoperability among courts? (IT) • Do courts have autonomy to define CMS functions and structures? (PM, CP, CM) • Is this autonomy impinging upon the development of integrated and interoperable CMS? (PM, CP, CM)
Political support and commitment	<p>Political support is relevant to provide the long-term funding required for these projects (+++). Political support is also needed when the legal framework must be revised to support the needs of CMS development (++).</p>	<ul style="list-style-type: none"> • What is the political disposition toward CMS that emerges from the analysis of the documents (i.e., transcripts of parliamentary sessions or parliamentary commission session) and media reports? (A) • Are judicial leaders and policymakers openly supportive of technology development? (A, PM) • Do strategic or policy documents of courts and the judiciary address the problems and challenges associated with the introduction of CMSs? (A) • What attitudes toward the introduction of CMSs are evident on social media? (A) • Is there any indication of willingness to make the required changes in the legal system to support and facilitate the introduction of the CMS? (PM, CM, CP) • Is there assurance of long-term financial and political support to CMS deployment and court digitization? (PM)
Leadership	<p>Given the systemic transformations triggered by CMSs, leadership is needed in courts and PPO offices where the system is deployed. Leadership at the highest judicial echelons is also needed to facilitate the adoption process and to change and clarify the legal framework where needed. (++)</p>	<ul style="list-style-type: none"> • What is the leadership that emerges from interviews in courts involved in the project? (CP, PM) • Who oversees the project? (PM) • Is there any difference between formal and informal leadership? (CS, CM, CP) • What is the nature of the support the leadership provides to the CMS? (CS, CM, CP)
Overall assessment	<p>Institutional conditions have important impacts on the development of CMSs. Long-term political support and legal adaptation are usually needed for the successful development of these projects.</p>	

TABLE 4. Using the Toolkit: E-filing

E-filing		
Judicial values	Description	Assessment questions and respondents
Access	E-filing is the court technology that has the highest impact on access to justice. It creates a new electronic gateway for lawyers and, (+++) potentially, for non-professional users and professional litigators (++++).	<ul style="list-style-type: none"> • Are the requirements to use the system (e.g., registration and identification) available to all prospective users? (L, CU, PM) • Is the system open to citizens and professional litigators? (PM, CU) • How easy is it to access the system? (CU, L) • Are there any technological prerequisites to be met to get access to the system (e.g., electronic ID)? (IT, L, PM) • Is the use of the e-filing system mandatory? (PM, L)
Legitimacy	Courts use up-to-date technology as the business sector signaling modernization (+++). Gains in legality and economy may also increase legitimacy (++).	<ul style="list-style-type: none"> • How does the e-filing system support CM policies? (JP, PM) • How is the data flow structured into the e-filing system? (IT, L, CS) • Is the operation of e-filing system transparent to users? (CU, L) • Are there any surveys to assess trust and legitimacy of judicial institutions? (PM, A) • Does the e-filing system increase the transparency and accountability of the filing procedures? (L, PM, CP) • What policies monitor the results achieved by the e-filing system at the court/nation level? (PM) • A survey to assess the fairness of judicial (strictly correlated with the legitimacy of the system) can be downloaded at http://www.courttools.org/Trial-Court-Performance-Measures.aspx.
Legality	It improves the consistent application of procedural laws in relevant areas; it avoids problems with summons not served and lost files and document; it increases the predictability of court operations (+++)	<ul style="list-style-type: none"> • Does the e-filing system simplify case-related data exchange? (L, CS, JP) • Are the rules of the code of procedure coherently written into the e-filing system workflow and data sets? (L, CS, JP) • How are the digital procedures formalized within the procedural law? (L, CS, JP) • Are there any critiques about the non-compliance of the e-filing system with the existing procedural rules? (L, JP) • Does the e-filing system properly enforce legal provisions? (JP, CM, CP, PM, L) • Is the functioning of the system stable and reliable? (IT, L)

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TABLE 4. Using the Toolkit: E-filing *(continued)*

E-filing		
Legality <i>(continued)</i>		<ul style="list-style-type: none"> Is there an emergency plan to guarantee the regular functioning of judicial proceedings in case of a system breakdown? (IT, PM, CM) Additional indicators to assess the rule of law and legality can be found in the Rule of Law Checklist approved by the Venice Commission and by the Council of Europe (Venice Commission, 2016)
Economy	Relevant savings in data entry, document management and interchange, and summoning. It could speed up court operations (+++).	<ul style="list-style-type: none"> How long does it take to serve case documents with the e-filing platform? (L, IT) Does the e-filing system deliver effective time savings? (PM, IT) How long does it take to serve a summons in a case? (IT) How much does it cost to file a case electronically, compared to the paper-based system? (L, IT) How many cases per month were filed to the court before and after the introduction of the e-filing system? (IT, CM) How much does it cost to manage a case, once the e-filing system is introduced? (CM) How do the e-filing procedures compare with paper-based procedures? (CM, PM) How many person-hours does the introduction of the e-filing system save? (CM, PM, IT) Additional indicators about economy (efficiency and effectiveness) can be found in: <ul style="list-style-type: none"> Court tools, the Court performance measures developed by the National Center for State Courts, available at: http://www.courttools.org/ SATURN time management tools (Council of Europe), available at: https://www.coe.int/en/web/cepej/cepej-work/saturn-centre-for-judicial-time-management.
Overall assessment	Strong improvement in all relevant areas.	
Infrastructural preconditions	Description	Assessment questions and respondents
Bandwidth	Bandwidth (++) and reliability (+++) of network infrastructures are essential.	<ul style="list-style-type: none"> What bandwidth does the e-filing system need? (IT) What is the effective bandwidth available? (IT) Is the bandwidth scalable? (IT) Is the bandwidth reliable? (IT)
Technology-related skills	A radical change in work practices of all those using the system is required. Training is needed to use of the systems and the redesigned procedures (+++).	<ul style="list-style-type: none"> Are there any previous experiences in using ICT for filing operations? (PM) Have the training needs been assessed? (PM, CM) How many hours of training were/are available per person in the use of the new system? (PM, CM)

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TABLE 4. Using the Toolkit: E-filing *(continued)*

E-filing		
Interoperability and openness	The e-filing system should respect national interoperability standards to facilitate the development of common public services (++); open standards will facilitate the growth of e-services for lawyers, business, and citizens (++).	<ul style="list-style-type: none"> • What are the technical characteristics of data standards and architectural gateways? (IT) • Are the standards open or proprietary? (IT) • Are data standards and architectural gateways compatible with the e-filing system requirements? (IT, PM) • What changes are needed to create the wanted interoperability? (IT, PM) • Are there national e-government standards? (IT, PM) • Are the national e-government standards useful to simplify the e-filing system design and deployment? (IT, PM)
Overall assessment	Demanding infrastructural preconditions.	
Technological and organizational factors	Description	Assessment questions and respondents
Organizational arrangements	Organizational changes are needed to align the ICT-enabled workflow and organizational structures within courts and PPOs, as well as with lawyers (+++). ICT units must be established to provide prompt technical support (+++). The level of support to judges and prosecutors is critical (+++). Also, collaboration with national and local bar associations is required to agree on standards and procedures (+++). Strong support can reduce the problems of judicial adoption, but it reduces efficiency.	<ul style="list-style-type: none"> • What is the degree of filing standardization within courts and PPOs and across the country? (PM, CP, L) • Are common filing standards in place, or does each court and PPO adopt different filing procedures? (PM, CP, L) • What are the common filing standards across courts and PPOs? (PM, CP, L) • Are there national filing standards? (PM, CP, L) • Are the national filing standards compatible with e-filing requirements? (PM, CP, IT) • How many e-filing systems coexist in the country? (PM)
Organizational culture	Organizational culture affects the adoption process (+++). A hierarchical culture and strong court leaders facilitate the deployment of e-filing systems. Autonomous culture and individualized procedures make their adoption more challenging.	<ul style="list-style-type: none"> • What is the degree of control that judges exert over the organization of filing and the timing of key filing events? (JP, CP) • What is the degree of ownership of filing procedures by individual judges? (JP, CP) • Do court personnel (judges in particular) emphasize the importance of ensuring continuity with the past? (JP) • Is the court leader playing a strong role in establishing local filing procedures and policies? (JP, CP)
Workflow efficiency	E-filing adoption leads to improved workflow and benefits standardization of paper-based routines into the new digital media (++).	<ul style="list-style-type: none"> • What are the formal and informal filing workflows? (CS, JP, L) • Are there bottlenecks that can reduce the efficiency of the systems? (CS, CM, CP, L) • Are there tasks or workflow steps that can be eliminated or improved with the development of an e-filing system? (CS, JP, L) • What CM policies are written into the e-filing system? (CS, JP, L, CP) • How many types of procedures (e.g., civil, administrative, and criminal) are standardized in the e-filing system? (CM, PM, IT)

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TABLE 4. Using the Toolkit: E-filing *(continued)*

E-filing		
Information system transparency	With e-filing, a relevant amount of procedural action is inscribed into computerized systems. Hence, transparency is fundamental to assure each user that the system has performed the required actions (++).	<ul style="list-style-type: none"> • What are the automated operations? (IT) • Are they properly traceable? (IT) • How do the traced digital operations benchmark against the legal framework? (IT, CS, JP, CM) • How does the system guarantee the proper information transparency? (IT, CS, JP, CM) • Are system logs and system log analyzers built into the system? (IT)
Backward and forward compatibility	Backward compatibility (with CMSs) is not always easy (++) with old CMSs and with the first e-filing prototypes. Forward compatibility will become an issue (++) . The decision to adopt e-filing is irreversible, and, over time, the technology must be updated. The use of national interoperability standards favors backward and forward compatibility.	<ul style="list-style-type: none"> • What are the technical data standards and architectural standards for e-filing? (IT) • Are the e-filing standards compatible with the existing CMS system? (IT) • What are the future interoperability needs? (IT, PM) • How open are the standards and technical architectures? (IT, PM) • How much are the architectures dependent on proprietary standards? (IT, PM) • Are there national e-government standards? (IT, PM)
Overall assessment	E-filing is challenging from a technological and organizational standpoint. When these challenges are underestimated, the project becomes quickly unmanageable.	
Institutional conditions	Description	Assessment questions and respondents
Legal readiness	E-filing requires relevant legal changes to authorize the use of digital media in legal proceedings (+++). Also, the technological features of the technical components may be legally regulated (++) . The existing legal framework must enable the full legal performativity of the technology.	<ul style="list-style-type: none"> • Does the e-filing system comply with the existing legal framework? (CS, CM, CP, PM, L) • Given the existing legal framework, is it possible to eliminate paper-based filing procedures and make them all digital? (JP, PM, L) • What are the necessary changes to facilitate compatibility between the legal system and the e-filing system? (PM, JP, L, A, IT) • Can these changes be easily made, given the existing legal framework? (PM)
Legal clarity	A clear and sound legal framework is a prerequisite for e-filing adoption (+++). However, it is not unusual that petitions at superior courts challenge the performativity of technological systems. This is the normal way judicial systems clarify the implications and meanings of legal texts. It is crucial to have these petitions decided expeditiously to re-establish legal clarity (++) .	<ul style="list-style-type: none"> • Are filing procedures clear and properly defined? (JP, L, CS, PM) • Which filing procedures are open to interpretation (less standardized across the courts)? (JP, L, PM) • Is there agreement on the interpretation of the filing procedures? (JP, L, PM) • What measures can be taken to create consensus about the filing procedures and workflow? (PM, L, JP)

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TABLE 4. Using the Toolkit: E-filing *(continued)*

E-filing		
Autonomy of the institutions involved	The MoJ, the judicial council, the national bar, and local justice providers (i.e., courts and local bar) must develop new forms of collaboration to accommodate the changes imposed by e-filing (++).	<ul style="list-style-type: none"> Do national governance bodies share the goals and the necessary commitment? (PM) Do courts have autonomy to determine filing functions and structures? (PM, CP) Are appropriate coordination mechanisms in place to deal with the autonomy of the institutions involved? (PM, CP) Are there reasonable incentives in place? (PM, CP, A) Is this autonomy impinging upon the development of integrated and interoperable e-filing systems? (PM, CP, JP, A)
Political support and commitment	The need to adapt the existing legal framework, to make consistent and long-term investments, and to align the priorities of the institutions involved requires strong and enduring commitment (+++).	<ul style="list-style-type: none"> What is the political attitude toward e-filing that emerges from the analysis of documents (i.e., transcripts of parliamentary sessions or parliamentary commission session) and media reports? (A) Are judicial leaders and policymakers openly supportive of technology development? (A, PM) Do strategic or policy documents of courts and judiciary address the problems and challenges associated with the introduction of e-filing? (A) What is the attitude toward the introduction of e-filing in social media data? (A) Is there any indication of willingness to make the required changes in the legal system to support and facilitate the introduction of e-filing? (PM, CM, CP) Is there assurance of long-term financial and political support to e-filing deployment and court digitization? (PM)
Leadership	Strong leadership and vision are needed within every organization that is involved (+++).	<ul style="list-style-type: none"> What is the leadership that emerges from interviews in the organizations that are involved in the project? (CP, PM) Who oversees the project? (PM) Is there any difference between formal and informal leadership? (CS, CM, CP) What is the nature of the support the leadership provides to e-filing? (CS, CM, CP)
Overall assessment	E-filing is demanding, from an institutional standpoint. For this reason, it is appropriate to consider its deployment as a complex judicial reform.	

TABLE 5. Using the Toolkit: Integrated Justice Chain

Integrated justice chain (IJC)		
Judicial values	Description	Assessment questions and respondents
Access	It simplifies document and information exchange between courts and PPOs, but it does not impact access. If electronic communication is open to lawyers and provides services to citizens (i.e., victims and witnesses), it improves access to justice (+).	<ul style="list-style-type: none"> • Is it providing e-services also to citizens or self-represented accused? (CU, PM, L) • How easy is it to get access to the system? (CU) • Are there any technological prerequisites to be met to get access to the system (electronic ID, etc.)? (PM, L) • Is it mandatory for the institutions involved (e.g., PPO and courts)? (CP, CM, PM)
Legitimacy	Courts use up-to-date technology as the business sector indicating modernization (+++). Gains in legality and economy may also increase legitimacy (++).	<ul style="list-style-type: none"> • How does the IJC system support CM policies? (JP, PM) • How is the data flow structured into the IJC system? (IT, L, CS, JP) • Is the operation of the IJC system transparent to users? (JP, CS, L) • Does the IJC system increase the transparency and accountability of the filing procedures? (JP, CS, L) • Are there any policies to account for the results achieved by the IJC system at court/ nation level? (PM) • Are there any surveys to assess the trust and legitimacy of judicial institutions? (PM) <p>A simple survey to assess the fairness of judicial (strictly correlated with the legitimacy of the system) can be downloaded at http://www.courttools.org/Trial-Court-Performance-Measures.aspx.</p>
Legality	It improves the consistent application of procedural laws in relevant areas; it avoids problems with summons which are not served, lost files and documents; and it increases the predictability of court operations (+++).	<ul style="list-style-type: none"> • Does the IJC filing system simplify the exchange of case-related data? (JP, CS, CM) • Are rules of the code of procedure coherently written (formalized) into IJC system workflow and data sets? (JP, CS, L) • How are the digital procedures formalized in procedural law? (JP, CS, L) • Are there any critiques about the non-compliance of the IJC system with the existing procedural rules? (JP, CS, L) • Does the IJC properly enforce (respect) legal provisions? (JP, CS, PM, L) • Is the functioning of the system stable and reliable? (JP, CS, L) • Is there an emergency plan to guarantee the regular functioning of judicial proceedings in case of a system breakdown? (JP, CS, PM, L),

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TABLE 5. Using the Toolkit: Integrated Justice Chain *(continued)*

Integrated justice chain (IJC)		
Legality <i>(continued)</i>		<ul style="list-style-type: none"> Additional indicators to assess the rule of law and legality can be found in the Rule of Law checklist approved by the Venice Commission and by the Council of Europe (Venice Commission, 2016)
Economy	Relevant savings in data entry, document management and interchange, and summoning. It could speed up court operations (+++). The impact on PPOs may be less evident. PPOs' use of the IJC may require additional activities in upstream organizations (++). The benefits of the IJC are not always evenly distributed across the justice chain.	<ul style="list-style-type: none"> How long does it take to serve case documents with the IJC platform? (CS, CM) Are there time savings with the IJC systems? (PM, IT) How long does it take to summon a case? (CS, IT) How much does it cost to file a case via the IJC, compared to the off-line system? (CM, PM, IT) How much does it cost to manage a case once the IJC is introduced? (CM, PM, IT) How do the IJC procedures compare to off-line procedures? (CM, PM) How many person-hours does the introduction of the IJC system save in the court work? (CM, PM, IT) Additional indicators about economy (efficiency and effectiveness) can be found in: <ul style="list-style-type: none"> Court tools, the Court performance measures developed by the National Center for State Courts http://www.courttools.org/ SATURN time management tools (Council of Europe) available at https://www.coe.int/en/web/cepej/cepej-work/saturn-centre-for-judicial-time-management.
Overall assessment	Strong improvement in legality and economy; improvement also in legitimacy, if the system complies with the expectations. The IJC may have different impacts on courts and PPOs, when considering economy.	
Infrastructural preconditions	Description	Assessment questions and respondents
Bandwidth	Bandwidth (++) and reliability (+++) of network infrastructures are essential.	<ul style="list-style-type: none"> What bandwidth does the IJC system need? (IT) What is the effective bandwidth available? (IT) Is the bandwidth scalable? (IT) Is the bandwidth reliable? (IT)
Technology-related skills	It requires a radical change in the work practices of all those using the system. Training is needed to use the systems and the redesigned procedures (+++).	<ul style="list-style-type: none"> Are there any previous experiences in using ICT for exchanging procedural data or procedural documents? (PM) Has the assessment of training needs been made? (PM, CM) How many hours of training were/are available per person involved in the use of the new system? (PM, CM)

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TABLE 5. Using the Toolkit: Integrated Justice Chain *(continued)*

Integrated justice chain (IJC)		
Interoperability and openness	The IJC has to respect national interoperability standards, since it requires data and document exchange with a plurality of public bodies (++); openness is relevant, but less critical, since there is little market for e-services for lawyers and citizens (++)	<ul style="list-style-type: none"> • Have PPOs' and courts' systems the same technological standards? (IT) • What are the technical characteristics of data standards and architectural gateways? (IT) • Are the standards open or proprietary? (IT) • Are data standards and architectural gateways compatible with the IJC system requirements? (IT) • Are common standards in place, or does each court and PPO adopt different ones? (IT, PM) • What changes are needed to create the wanted interoperability? (IT, PM) • Are there national e-government standards? (IT, PM) • Are the national e-government standards useful to simplify the design and deployment of the IJC system? (IT, PM)
Overall assessment	Demanding infrastructural preconditions.	
Technological and Organizational Factors	Description	Assessment questions and respondents
Organizational arrangements	Organizational changes are needed to align the ICT enabled workflow and organizational structures within courts and PPOs, as well as with lawyers (+++). ICT units must be established to provide prompt technical support (+++). The level of support to judges and prosecutors is critical (+++). Also, collaboration with National and Local Bar associations is required to agree standards and procedures (+++). Strong support can reduce the problems of judicial adoption, but reduces efficiency.	<ul style="list-style-type: none"> • What is the degree of filing standardization within the court and PPO and across the country? (PM, CP, JP) • What are the common filing standards and procedures across courts and PPOs? (PM, CP, JP) • Are the national filing standards and procedures compatible with the IJC requirements? (PM, CP, IT) • How many IJC systems coexist in the country? (PM)
Organizational culture	Organizational culture affects the adoption process (+++). A hierarchical culture and strong court leaders facilitate the deployment. Autonomous culture and individualized procedures make the adoption very challenging. PPOs are generally more hierarchical than the courts (++)	<ul style="list-style-type: none"> • What is the degree of control that judges and prosecutors have on the organization of filing and on timing of key filing events? (JP, CP) • What is the degree of ownership of filing procedures by individual clerks? (JP, CP) • Do judges and prosecutors emphasize the importance of granting continuity with the past? (JP) • Is the court leader playing a strong role in establishing local filing procedures and policies? (JP, CP)
Workflow efficiency	The IJC involves deep changes in the workflow of all the organizations involved, and benefits of functional simplification and adaptation of paper-based routines to the new digital media (++)	<ul style="list-style-type: none"> • What are the formal and informal filing workflows? (CS, CM, CP, JP) • Are there bottlenecks that can reduce the efficiency of the systems? (CS, CM, CP, JP) • Are there tasks or workflow steps that can be eliminated or improved with the development of the IJC system? (CS, CM, CP, JP) • What CM policies are written into the IJC system? (CS, JP, CP)

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TABLE 5. Using the Toolkit: Integrated Justice Chain *(continued)*

Integrated justice chain (IJC)		
Information system transparency	With the IJC, a relevant amount of procedural action is inscribed into computerized systems. Since data entail criminal cases, additional efforts have to be placed to assure transparency about the functioning of the system (++++)	<ul style="list-style-type: none"> • What are the automated operations? (IT) • Are they properly traceable? (IT) • How do the traced digital operations benchmark against the legal framework? (IT, JP) • How does the system guarantee the proper information transparency? (IT) • Are system logs and system log analyzers built into the system? (IT)
Backward and forward compatibility	Backward and forward compatibility is critical with the IJC. CMSs of courts and PPOs may be built upon different standards and may have different trajectories of evolution. The IJC relies on the interoperability of many other systems, and must enable their backward and forward interoperability.	<ul style="list-style-type: none"> • What are the technical data standards and architectural standards? (IT) • Are the IJC standards compatible with the existing CMS systems? (IT, CS, JP) • What are the future interoperability needs? (IT, PM) • How open are the standards and technical architectures? (IT) • How much are the architectures dependent on proprietary standards? (IT) • Are there national e-government standards? (IT, PM)
Overall assessment	The IJC is challenging from a technological and organizational perspective. When the challenges are underestimated, the project becomes quickly unmanageable.	
Institutional Conditions	Description	Assessment questions and respondents
Legal readiness	The IJC requires relevant legal changes to authorize the use of digital media in criminal proceedings (+++). Also, the technological features of the technical components may be legally regulated (++). The existing legal framework must enable the full legal performativity of the technology.	<ul style="list-style-type: none"> • Does the IJC system comply with the existing legal framework? (CS, CM, CP, JP, PM) • Is it possible to dismiss the paper-based procedures and make digital all the exchanges of procedural documents? (JP, PM, CS) • What are the necessary changes to facilitate the compatibility between the legal system and the IJC system? (PM, JP, CS, CM) • Are these changes easy to be made, given the existing legal framework? (PM)
Legal clarity	A clear and sound legal framework is a prerequisite for the adoption of the IJC (+++). However, it is not unusual that petitions at superior courts challenge the performativity of IJC systems. This is the normal way judicial systems clarify the implications and meanings of legal text. It is then crucial to have these petitions decided in the fastest way, to re-establish legal clarity (++).	<ul style="list-style-type: none"> • Are the filing procedures clear and properly defined? (JP, CS, PM) • Which filing procedures are open to interpretation (i.e., less standardized across the courts)? (JP, PM) • Is there agreement on the interpretation of the filing procedures? (JP, CS) • What measures can be taken to create consensus on the filing procedures and workflow? (PM, JP)

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TABLE 5. Using the Toolkit: Integrated Justice Chain *(continued)*

Integrated justice chain (IJC)		
Autonomy of the institutions involved	The MoJ, the judicial council, the national bar, and local justice providers (i.e., courts and local bar) must develop new forms of collaboration to accommodate the changes imposed by the development of the IJC. The number of institutions involved, their institutional autonomy, and the different priorities of each subject may hamper the swift and soft deployment of IJCs (+++).	<ul style="list-style-type: none"> • Do national governance bodies share the goals and the necessary commitment for the development of the IJC? (PM) • Do courts and PPOs have autonomy to define the procedures of the IJC? (PM, CP) • Does autonomy affect procedural standardization? (IT, CP, PM) • Are appropriate coordination mechanisms in place to deal with the autonomy of the institutions that are involved? (PM, CP) • Is this autonomy impinging upon the development of integrated and interoperable IJC systems? (PM, CP, JP, A) • Are there reasonable incentives in place? (PM, CP, A)
Political support and commitment	The need to adapt the existing legal framework, to make consistent and long-term investments, and align the priorities of the institutions involved requires strong and enduring commitment (+++).	<ul style="list-style-type: none"> • What is the political attitude toward the IJC that emerges from the analysis of documents (i.e., transcripts of parliamentary sessions or parliamentary commission session) and media reports? (A) • Are judicial leaders, chief prosecutors, and policymakers openly supportive of technology development? (A, PM) • Do strategic or policy documents of the courts and the judiciary address the problems and challenges associated with the introduction of the IJC? (A) • What is the attitude toward the introduction of the IJC in social media data? (A) • Is there any indication of willingness to make the required changes in the legal system to support and facilitate the introduction of the IJC? (PM, CM, CP) • Is there assurance of long-term financial and political support to the deployment of the IJC and of justice chain digitization? (PM)
Levels of leadership	Strong leadership and vision are needed within every organization involved (+++).	<ul style="list-style-type: none"> • Who oversees the project? (PM) • What leadership emerges from interviews in the organizations that are involved in the project? (A) • Is there any difference between formal and informal leadership? (A) • What is the nature of the support the leadership provides to the IJC? (A, PM)
Overall assessment	Integrated criminal judicial chain is extremely demanding from an institutional perspective. For this reason, it is appropriate to consider its deployment as a complex judicial reform.	

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