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CGI

# Reforming justice for the digital age

Liz Crowhurst, The Police Foundation, in partnership with CGI

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## Background and acknowledgements

In partnership with CGI, the Police Foundation embarked upon a project to explore how digitisation could be better harnessed by agencies across the justice system with a particular emphasis on the benefits to service-users. Through consultation with industry experts and policymakers we hoped to be able to not only identify continuing barriers to change, but also to propose innovative solutions to age-old problems of inefficiency and user-dissatisfaction. As part of this process a number of roundtable discussions were also facilitated, alongside some informal interviews. All of these sessions were held under the Chatham House Rule.

The Police Foundation is very grateful to CGI for funding this project and would like to express particular gratitude to Nick Dale who led from CGI and David Filmer and Pete Merry for their contributions to this discussion paper.

## About the Police Foundation

The Police Foundation was founded in 1979 and is the only independent think tank focused entirely on influencing policing policy and practice (and related issues) through research, policy analysis and training/consultancy. Its core aim is to challenge the police service and government to improve policing for the benefit of the public. Since its inception, the Police Foundation has become an influential think tank on a wide range of police-related issues, working closely with external funders and other third sector organisations. **www.police-foundation.org.uk**

## About CGI

CGI is a leading independent information technology and business process services company which has helped over 2,000 government clients in 15 countries to improve citizen service and increase efficiency through successful digital transformation programs. Its integrated solutions help governments adopt modern and cost-effective working practices to support crime prevention and community policing; crime detection and analysis; courts, prosecution and probation; judicial administration; and border management.

Over the last 10 years CGI has provided both the Ministry of Justice with front line application support for over 30,000 staff and the Crown Prosecution Service with the technology to prosecute over 15 million defendants. CGI is also responsible for creating, building and operating the Police National Database which holds over 3.2 billion records. **www.cgi-group.co.uk**

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# 1. The case for change

## A crumbling system

*"We simply cannot go on with this utterly outmoded way of working ... Endlessly re-keying in the same information; repeatedly printing and photocopying the same documents; moving files about, losing all or parts of them in the process … It is a heavy handed, duplicative, inefficient and costly way of doing our work and it is all about to go. Considerably past time, we will finally catch up with the world."* [1]

**Sir Brian Leveson, June 2015**

Our criminal justice system (CJS) is beset by inefficiency. While technology has revolutionised service delivery in the private sector, and even other parts of government, our justice system often remains wedded to archaic practices and out-dated legacy IT systems, resulting in inefficient and increasingly inadequate services.

A clear illustration of these failings is that across our court system only half of trials take place on the day they were scheduled to do so – falling to just a third in the Crown Court.[2] This results in significant, and already limited, resources being squandered. In 2014/15, for example, £93 million was spent on defence counsels for cases that never made it to trial.[3] Across this same period, a further £22 million was spent by the Crown Prosecution Service (CPS) – again, preparing files that would never see a courtroom.

A dependence on paper-based working continues to result in unnecessary duplication and increased margins of error while manual processes such as the use of hard-copy discs contribute to higher volumes of lost evidence.[4] This not only again wastes public money, but leads to unsatisfied victims and witnesses. According to work by the National Audit Office (NAO), just 55 per cent of individuals who had been either victims or witnesses in court would do so again.[5]

Offenders, whose records may be misplaced or out of date when they are transferred between institutions, are also affected. Poor file management can have significant implications for both ensuring rehabilitative interventions are appropriately targeted, and in the most serious of cases, that accurate custodial release dates are adhered to and thus human rights observed.[6]

Digitisation offers the opportunity to resolve some of these challenges. Technology can streamline processes, join-up services and achieve a cheaper CJS that delivers improved outcomes for victims, witnesses, defendants and offenders. Internationally – such as in the US, Australia and Canada – digital working has already helped reduce waiting times, increase engagement with jurors and reduce the number of 'cracked' or ineffective trials.[7]

In England and Wales however, agencies have seen more limited success. It has been argued that much of the focus of digitisation to date has been on realising short-term savings, through replicating traditional processes in a digital way – regardless of their inherent efficiency or effectiveness. In addition, while some courts, police forces and practitioners have embraced new technologies, overall adoption remains patchy. In the magistrates' courts, for example, there are still a number of practitioners who are yet to experience digital working.

Truly realising the benefits of digitisation requires a fundamental rethink of how our criminal justice service operates and how those working within the system engage with the public. This discussion paper helps to meet this challenge through laying out examples of best practice in the UK and internationally. The paper

1 Leveson (2015).
2 Ministry of Justice (2015a).
3 National Audit Office (2016).
4 Criminal Justice Joint Inspectorate (2016).
5 Criminal Justice Joint Inspectorate (2016).
6 BBC News (2015).
7 See, for example, Wallace (2001) and Prado (2003).

will also draw on examples of technological progress in the private sector in order to identity new potential avenues for reform.

## Delivering justice in the 21st century

### *Shifting demands*

Across the CJS demand is changing. Traditional crimes of acquisition and violence are being replaced by domestic abuse and cyber-attacks. Since 1995 incidents of theft, according to the Crime Survey of England and Wales, have fallen 69 per cent (and domestic burglary by 71 per cent)[8] while new work by the Office for National Statistics (ONS) found over five million incidents of fraud and over two million incidents of crime falling under the Computer Misuse Act within a single year.[9] When compared with the grand total of 6.8 million offences it is clear that the impact of these new crime types is significant.[10]

As a result of this shift, Her Majesty's Courts and Tribunal Service (HMCTS) has similarly seen a reduction in the overall number of cases progressing through the courts, but increases in case complexity. There has, for example, been a six per cent fall in the number of cases going to the crown court, but an increase in the number of sexual offences being prosecuted – in total a rise of 12 per cent over five years.[11] Add to this the growth in reported levels of online fraud and cybercrime, and it is clear that dealing with more complicated offences is set to be a substantial challenge for the police, prosecutors and courts.

The growth of more complex trials has also seen waiting time in these courts rise by a third over the last three years – taking the case average up to over 130 days. This has resulted in substantially greater numbers of backlogged cases with levels now 34 per cent higher than in 2013[12] – although in late 2016 the Lord Chief Justice suggested this is finally beginning to fall.[13]

In addition, there are significant regional variations with very little national consistency. The Midlands, for example, is much less efficient at progressing cases than the North East and London.[14] This postcode lottery does little to support public confidence and user-satisfaction.

### *Constrained finances*

Within this context of changing demand, significant spending cuts across the last parliament have also provided a burning platform for increasing efficiency within the CJS. The 2010 Spending Review found the CPS tasked with finding real terms savings of 28 per cent while HMCTS was required to find 35 per cent.[15] Within policing, forces saw on average a reduction of 20 per cent in central government funding between 2010 and 2014-15.[16]

Under the Conservative government, the 2015 Spending Review brought further challenges, but also new opportunities. In a surprise U-turn, potentially in light of the Paris terror attacks, police forces found their budgets ring-fenced (albeit artificially[17]) and while the Ministry of Justice (MoJ) must once again find further savings – a total of 15 per cent by 2019/20 – HM Treasury also committed just over £700 million in capital investment to support greater use of technology within the courts.[18] This investment into improving digital infrastructure aims to generate efficiency savings of an estimated £200 million per year from 2020 onwards.[19]

Digitisation (particularly through the diversion of cases out of court) will also aim to facilitate further estate

8 Office for National Statistics (2017).
9 Office for National Statistics (2017).
10 As estimated by the Crime Survey of England and Wales. See Office for National Statistics (2017).
11 Ministry of Justice (2015a).
12 National Audit Office (2016).
13 House of Commons Justice Select Committee (2016).
14 Ministry of Justice (2015a).
15 HM Treasury (2010).
16 Although through the application of the current police funding formula there was wide variation in how these cuts translated into real-terms savings across different forces. The total saved over this period ranged from £9.5 million in Dyfed Powys to £543 million in the Metropolitan Police Service. See Her Majesty's Inspectorate of Constabulary (2014) for a more detailed breakdown across forces.
17 Maintaining current spending would still in some areas rely on forces raising the local precept.
18 HM Treasury (2015).
19 This £700 was almost double the previous figure of £375 million previously proposed by the MoJ at the beginning of 2015. Under this scheme, only half the savings, which amount to about £100 million per year, were expected to be realised from 2019/20. See Ministry of Justice (2015b).

rationalisation, through the sale of a number of underused or ill-equipped old court buildings. With the magistrates' courts only in use just under half of the time on average, this provides another important opportunity to significantly reduce costs.[20]

## Moving towards digitisation

Partially in response to their tough financial settlement, in late 2011, the MoJ launched the Criminal Justice System Efficiency Programme. Combined with other key reforms such as Transforming Summary Justice[21] and the Police Digital First Programme[22] the MoJ, alongside the Home Office, has embarked upon a radical programme of digital reform which aims to support more efficient working.

A key starting point for this process of digitisation has been the roll out of wifi across courtrooms. This is essential not only for judges to be able to use digital resources, such as legal libraries, but also for advocates to be able to access multiple case files online from a single location. To date, wifi has been successfully introduced across all magistrates' and crown courts[23] – although some criticism has remained about the quality of these connections.

Secondly, an important area of improvement is the introduction of the digital case file. It aims to reduce the cost of producing and storing physical files, streamline processes and improve the quality of files through reducing the amount of manual work required from the police or court staff.[24] In 2010, the then Director of Public Prosecutions, Keir Starmer stated that the digital case file "should become the currency of the criminal justice system".[25] It has subsequently been introduced into the magistrates' courts with plans to begin extending it to the crown courts late last year. It is hoped that the significant reduction in paper will result in a faster throughput of cases, increasing both efficiency and access to justice for citizens.

To reduce the need for paper-based working, it is also becoming increasingly commonplace for practitioners to present evidence digitally. In fact, in the magistrates' courts in 2014, 100 per cent of hearings were presented from a digital device.[26] For the judiciary and court clerks the ability to use digital mark-up screens on tablets and laptops has enabled cases to be finalised while being heard in the courtroom – rather than requiring administrative work to be completed later in an office-based environment.

In addition, digitisation can support the submission of online pleas – which has been piloted in Greater Manchester for traffic offences.[27] Allowing the public to submit a plea from any device securely through the 'Make a Plea' programme frees up courts and legal professionals to devote time to more complex, high-harm cases through removing the need for postal correspondence or physical appearances in court. This not only reduces the amount spent on progressing these less serious cases, but increases access to justice for those awaiting case outcomes.

For victims and witnesses, the ability to track the progress of cases has also been piloted and adopted by a number of forces. In Avon and Somerset, for example, 'Track My Crime' is a web based application designed to keep all relevant parties informed of a case's journey through the CJS. Victims receive an automated SMS or email when their case is updated on police systems allowing access to relevant information at a time that is convenient for them. While this initiative is promising, and of interest more widely across other forces,[28] greater engagement with service users remains an important area for further development across the CJS.

20 Ministry of Justice (2016a).

21 Transforming Summary Justice was introduced by the Coalition to reduce case delays. It was jointly agreed across eight agencies including the CPS, HMCTS, police forces and the Law Society. It included provisions to improve the quality of police files and streamline bail proceedings. More information can be found at Her Majesty's Crown Prosecution Inspectorate (2016).

22 Led by Chief Constable Simon Cole, the 'Digital First' programme aims to define standards across a number of technical processes and create a new Application Programming Interface (API) by which the police can share multimedia evidence with other parts of the CJS.

23 For an interactive map see Legal Aid Agency (2014).

24 Ministry of Justice (2015b).

25 Reform (2015).

26 Reform (2015).

27 Coleman (2015).

28 Muir (2012). 'Track My Crime' is now being used by a number of other forces including: Derbyshire, Dyfed Powys, Humberside, Hertfordshire, Kent, Northamptonshire and South Yorkshire.

## Joined-up justice

Alongside improved performance within individual justice agencies, technology also has the ability to promote more integrated working. Back in 2010, Her Majesty's Inspectorate of Constabulary (HMIC) found that during the prosecution of a standard domestic burglary there were 70 'rubbing points' where the progress of a case was dependent upon one justice agency securing information from another. In addition, as part of this process there were at least seven occasions where data needed to be transferred between agencies.[29] This level of complexity presents multiple moments for mistakes to be made and for duplication to occur. Digitising or streamlining these processes thus provides a significant opportunity for eradicating error, driving efficiency and speeding up justice.

To date, there have also been some important developments in this area. The Criminal Justice Exchange (CJE), for example, allows files to be transferred digitally and securely between the police and prosecutors. In most forces, over 90 per cent of case material is now received this way by the CPS.[30] The CJE does, however, have significant limitations including the size and format of files it can host.

Videoconferencing facilities installed in police stations, courts and even prisons can also serve to expedite cases, as well as saving money through reducing transportation costs. They can also help deal with instances of judicial illness. Where a judge or magistrate is taken unwell at late notice, for example, video links can be used to remotely dial in another available decision-maker preventing the need for cases to be postponed. Most importantly, remote hearings provide additional support to vulnerable individuals for whom testifying in court may be overwhelming. This may not only increase victim and witness satisfaction, but has the potential to support higher numbers of successful prosecutions.

Across a number of justice agencies, the CJS has also undertaken an ambitious programme to create a single common case management platform.[31] The vision is to build a single system where individuals can have access to case files and other relevant information regardless of which criminal justice agency they work for. By creating one portal for all agencies, the programme aims to ensure no evidence or case information is lost as it is transferred through the system. It will also enable court practitioners to tap into important resources held by the police. For example, an Application Programme Interface (API) has been developed (and piloted) which enables prosecutors to live stream multi-media from forces digital repositories.[32] This not only saves the court time, which would usually be spent waiting for evidence to be mailed, but also reduces the demand placed on the police who would traditionally have to convert digital evidence into hard copies. To date, the Common Platform has already begun supporting digital working and by 2018 it hopes to have begun the roll out of a fully unified system across the CPS and HMCTS.[33]

[29] Her Majesty's Inspectorate of Constabulary (2010).
[30] Ministry of Justice (2013a).
[31] First recommended by Lord Justice Auld in 2006, the creation of a common platform for the CPS, Police and HMCTS was also a key recommendation from Sir Brian Leveson, who in 2013 undertook an important review of efficiency in criminal proceedings.
[32] Reform (2015).
[33] Crown Prosecution Service (2016).

# 2. Barriers to reform

While much has been accomplished, however, it is also widely acknowledged that there are still significant challenges which continue to prevent truly digital working. As the Criminal Justice Joint Inspectorate (CJJI) commented earlier this year:

*"Progress in establishing a modernised criminal justice system has clearly been made but the vision of a digital end-to-end system where information is captured once by a police officer ... and then flows through the system without duplication or reworking, is still some way from reality."*

Many of these remaining challenges are longstanding and some well-known by the policy community; yet in some areas, a much greater understanding of the barriers to reform is still needed in order to tailor adequate solutions to address them. The section below focuses on a number of key challenges which were highlighted during our workshop sessions with practitioners from across the CJS.

## *Digitisation across rather than within justice agencies*

Realising a digital justice revolution of the magnitude laid out by Lord Justice Auld, Sir Brian Leveson and others requires all agencies to be working digitally by default. To date, however, much greater progress has been made by more centralised agencies such as the CPS and HMCTS than within police forces and among the independent advocates in our courts. Where these bodies remain hampered by more manual ways of working and ageing IT systems, it can result in digital documents needing to be transformed back into hard-copy. This undermines any efficiency that has been gained through digitisation.

While, it may still be the case that in certain circumstances this process is justifiable (for example where litigants in person (LIPs) are attending court and have no access to digital devices) the current scale on which this is occurring is excessive and must urgently be reduced. Searching for new ways to encourage digitised working across less centralised and more diverse bodies of individuals is therefore an important step towards a more effective and efficient system.

## *Shared aims means shared responsibilities*

The NAO has questioned whether incentives built into the current system encourage individual agencies to prioritise their own interests and push demand and costs further down the criminal justice chain.[34] Without a shared vision of integrated working, and most importantly pooled budgets, it will remain impossible to remove large areas of inefficiency from a complex web of interactions between multiple organisations.

Improving cooperation among agencies can also help ensure information is diligently entered right first time, which continues to pose issues. A 2015 inspection found that almost one in five charging decisions by the police were incorrect and the NAO has suggested that forces are failing to build files of sufficient quality or to appropriately disclose evidence.[35]

Of course, even in an environment where closer cooperation on is encouraged, there is still a need to identify where there are legitimate tensions between agencies. By design the agencies of the criminal justice system have very different roles and must maintain constitutional independence. This should not, however, prevent agencies working towards shared outcomes such as victim satisfaction and ensuring value for money for taxpayers.

## *Adopting digital working from the first point of contact*

While there has been significant progress in the digital transfer of data, the process of collecting information from those involved with criminal activity remains, for

[34] National Audit Office (2016).
[35] National Audit Office (2016).

the most part, manual. Statements, for example, may need to be typed up in order to be signed or exhibits scanned in order to be stored digitally. These processes – although more digitised than they were previously – continue to create unnecessary duplication and increase the margin for error.

## *Improving the interoperability of justice systems*

A lack of standardisation across agencies often prevents interoperability. This is, once again, particularly problematic within the police service where decentralised procurement processes have led to multiple systems being in operation.

Poor interoperability between systems also affects policing internally as it is occurring not just across, but even within forces. In 2014, for example, Britain's largest force, the Metropolitan Police Service (MPS), had 750 different systems in place.[36] Incompatible software poses further challenges. In one force the recent upgrade of Windows software has led to files now being rendered incompatible with CPS and HMCTS systems resulting in a return to older, manual forms of communication.[37]

Despite this problem being well-recognised by policymakers, there has been a continuing reluctance to mandate standardisation across force areas. The Digital First policing programme, for example, was designed to drive more consistent standards, however it still falls short of specifying what systems should be used. In addition, the Police Innovation Fund (PIF), introduced in part to drive digitisation, also fails to require uniformity from even materially similar bids. This again has resulted in forces procuring a wide variety of systems and equipment. The purchasing of different body worn camera equipment by multiple forces at similar times using PIF money is a case in point here.

The conflict between the need for interoperability and the power of chief constables to maintain their own operational independence raises the question of whether it is realistic to expect police leaders to be able to reach a consensus when it comes to new technologies. If collaboration and compromise continue to fail, perhaps there is a greater role for the Home Office? This is an avenue which has been pursued previously in other public service contexts. The National Police Air Service, for example, asked the Home Office to mandate national procurement as it knew they could not reach a consensus to this effect on its own – however this arrangement has been criticised.

Alternatively, if policing is to continue in many areas to be a self-governing system (as recent rhetoric from Home Secretary Amber Rudd suggests[38]) then there is a need for new mechanisms for police leaders to take decisions which are binding on everyone.[39] They should also again acknowledge that consensus is likely to be a difficult or often impossible outcome to achieve. Decisions should therefore be able to be taken based on a certain threshold of votes being reached – for example, a two thirds majority.

## *Communication with legacy systems*

The scale of justice services in England and Wales means it remains unimaginable that all current systems and equipment can be replaced under this programme of reform – despite the significance of the funds committed. Where legacy infrastructure exists therefore, the challenge is to find secure and consistent ways to help new technology talk to old.

Of course, it should still be noted that ageing IT is costly and that older systems may be more susceptible to cyber threats. The MPS, for example, previously estimated that 80 per cent of their IT spend went on simply supporting current technologies, rather than investing in more innovative and agile solutions.[40]

Ageing technologies are also increasingly unfit for purpose. This has a number of practical consequences for frontline practitioners however, it can also affect organisations interacting with justice agencies such as charities and support services.

36 Metropolitan Police Service (2014).
37 Criminal Justice Joint Inspectorate (2016).
38 Home Secretary's speech to the APCC/NPCC Rudd (2016).
39 Higgins et al. (2016).
40 Metropolitan Police Service (2014).

Where government supported systems continue to fail users it is increasingly likely that third parties will develop their own solutions, which again may not support interoperability. The greatest levels of efficiency can therefore only be expected to achieved when all technology infrastructures has been modernised.

## *Ensuring staff buy-in and changing entrenched cultures*

International evidence suggests that without adequate staff consultation and the introduction of internal digital 'champions' the implementation of technology can fail to have a significant effect on day to day working.[41] In the context of the court service, for example, it may be expected that judicial involvement will result in higher levels of adoption by other staff across the court service.

In addition, user-consultation is particularly important at the design or procurement phase and failure to capture the needs of practitioners may lead to the implementation of technology which is not fit for purpose.

It is also necessary to change cultures and drive more enthusiasm for digital working. A review by HMIC suggests that there is too much acceptance of inefficiency, error and duplication of efforts within some justice agencies.[42] A recent survey of CPS staff also found that only '18 per cent thought that the introduction of digitisation had been effective in improving the quality of service to victims and witnesses'.[43] Securing higher levels of commitment to digitisation from those using technologies in their day-to-day work is therefore an important step for frontline leaders.

## *Digital skills*

The gap between the digital skills required to overhaul archaic systems and those present within the current criminal justice (or even public sector) workforce continues to be problematic. On the ground, while some practitioners have adapted quickly to new working practices, others have struggled to master even the basics. A recent survey of 1,500 civil servants found that just 14 per cent would rate their digital capabilities as 'good' demonstrating there is clear scope for improvement.[44] More worryingly, there is a growing issue with attracting and retaining the right talent to design and build new systems. In the digital age, coding is increasingly a sought-after commodity in the open market – making portraying the civil service as an attractive alternative both challenging and essential for the success of digital reforms.

Research also suggests that inadequate training reduces the impact of new technologies by pushing staff to older, more familiar ways of working.[45] If agencies fail to provide the appropriate support, the consequences may be significant particularly given that evidence shows that bad initial experiences with new technologies can have negative long-term effects.[46]

## *Evaluation of digital programmes to identify 'what works'*

There is the need for greater evaluation of current pilots and national initiatives to ensure that public money is being put to good use. Where a detailed analysis has taken place it has produced valuable lessons for further implementation. The Home Office's analysis of video conferencing pilots, for example, provides useful insights into which types of cases may produce the greatest efficiency gains, as well as forewarning which court technologies may require substantial upfront investment and not deliver significantly improved outcomes.[47] This process of reflection, however, is not commonplace. The CJJI was shocked to find during interviews with agencies that they were unable to provide inspectors with the amount saved, or that was predicted to be saved due to programmes of digitisation.[48]

Delivering value for money for taxpayers will stem not simply from wider use of digitisation, but through a greater understanding of which technologies provide an opportunity for both cheaper and better justice.

41 Bailey and Burkell (2015).
42 Ministry of Justice (2013a).
43 Criminal Justice Joint Inspectorate (2016).
44 Civil Service World (2016).
45 National Audit Office (2016).
46 Koper et al. (2015).
47 Terry et al. (2010).
48 See Criminal Justice Joint Inspectorate (2016).

# 3. The future of digital justice

## Faster, cheaper, more effective

While current reforms will no doubt reduce public spending, more radical service redesign offers the opportunity to realise both greater savings and much better outcomes for users.

First, online portals are extremely likely to be expanded.[49] It is estimated that on completion Common Platform (alongside the Single Justice Procedure described below) will aim to take around 800,000 non imprisonable summary cases out of the courts. This will involve not only the ability for offenders to submit online pleas, but also for the state to dole out online punishments – in the majority of cases in the form of a pre-determined fixed fine. In the longer term, this principle has the potential to be extended even further – although offences which are likely to carry a prison sentence must continue to have appropriate safeguards and protections in place for the accused.

Second, the Single Justice Procedure is another avenue through which greater digitisation may be able to support more efficient justice processes. Here, summary cases are not decided via an online portal, but instead rely upon one magistrate and a legal advisor making a judgment without the need for a hearing. This is currently being piloted at Lavender Hill Magistrates' Court in South London for traffic offences.[50] Through the introduction of the digital case file it may be increasingly easy for legal experts to view all relevant evidence in one place and much more quickly.

It is important, however, that the introduction of alternative forms of decision making must be adequately piloted. This is essential to ensure potential efficiency gains are not squandered in the long term through low levels of effectiveness. For example, if new systems and processes result in higher numbers of appeals then there is the potential for little or no time or money to be saved.

There is also a need to consider how these new forms of remote justice are experienced by users. In particular, is there the appropriate level of support for individuals with low levels of digital skills or legal knowledge? Ensuring public confidence in new systems will require greater transparency and clear communication about how automated processes work. This is likely to incur a certain level of up-front investment.

## Rise of the robots

It has been suggested that greater use of automation and artificial intelligence has the power to radically change current criminal justice processes. While once seen as only possible in the realms of sci-fi movies, robots are already increasingly being employed in the private sector, and not just for the completion of simplistic or repetitive tasks. IBM's Watson technology, for example, has been used by large international law firms to conduct legal research to build evidence for a wide range of complicated cases. This goes beyond simply summarising key documentation and in places has now seen robots learning from human feedback and getting smarter over time.[51] Applied to the public sector, there is clearly the potential for significant savings to be made. CPS prosecutors and legal-aid funded defence lawyers, for example, could be aided to complete case preparation much faster, and without a reliance on research support staff, freeing up additional funding.

For more simplistic tasks intelligent automation can also enable agencies to work more efficiently. Where an activity has a clear set of well-established rules (such as if X and Y are present then Z happens) and there is structured data available to be processed

[49] Ministry of Justice (2016b).
[50] The Magistrates Association (2015).
[51] Sills (2016).

then a robot can complete the task much more quickly and with less errors than a human would. By reducing the burden of simplistic, volume tasks staff can then shift their attention to more complicated work – which is particularly important given the rise in complex demand highlighted earlier in this paper.

In addition, as well as speeding up the inner working of justice agencies, robotics may also have a role to play in improving the quality of certain activities. In the context of auditing casework, for example, robots can not only complete the task more quickly, but could also enable a much higher number of files to be checked for error and increase case file standards.

Looking into the future, it has even been suggested that intelligent automation could take on the role of judge. This would involve weighing competing arguments and imparting legally binding decisions. Recently, a robot judge created by University College London successfully reached the same conclusions as the European Court of Justice in 79 per cent of cases.[52]

Of course, where an individual's liberty is at stake it is widely accepted that robots will supplement rather than replace human experts.[53] There would clearly be a number of very valid challenges to relying solely on robotic decision making. This would include, for example, how the algorithms being used by robots have been developed and how transparent this process is to the citizens. If algorithms are poorly understood and hidden away from the public eye then the principles of open justice fail to be upheld. It is also somewhat uncomfortable for citizens to accept that robots will be taking decisions which have significant consequences without feeling the moral weight of what they are doing.

Even these more serious cases, however, may not necessarily render new technologies completely redundant. It has been well documented that even decisions taken by trained legal professionals are affected by subjective bias or other external factors. Racial bias has been highlighted as a significant issue affecting judicial decision-making[54] and judgements can also be affected by a number of external factors including even the most basic day-to-day distractions. A study of parole board judges in the USA, for example, found that parole approvals peaked directly following the judges meal breaks and steadily declined until hitting zero immediately prior to their next break to eat.[55]

Programmed correctly, decisions taken by robots are able to achieve much higher levels of objectivity as they are based solely on an algorithm. Applying these 'benchmark decisions' across a number of cases, may have the potential to help better highlight the role of judicial bias – which is arguably a valuable outcome in and of itself.

## Putting users at the heart of the CJS

Alongside squandering resources, it is clear that current processes are also failing service users. There is firstly a need to improve the way in which agencies communicate with service users. Many victims, witnesses and offenders still receive little or no information about how their cases are progressing – or even whether an offence will be taken to court. In fact, a third of victims will hear nothing more from the police after the act of reporting the crime.[56] This is despite the well-documented importance of keeping victims well-informed. Previous work by the MoJ, for example, found that the strongest factors that are independently associated with greater victim and witness satisfaction are being informed of case progress and knowing what to expect next.[57]

In addition, by marginalising service users within the criminal process, not only do victims and witnesses become disengaged with justice agencies, but it also has the potential to cause them to experience further distress.[58] Some research suggests this goes as far as constituting a process of secondary

52 Out of a total of 584 cases. See Johnston (2016).
53 See for example Susskind and Susskind (2015).
54 Rachlinkski et al. (2009).
55 Kahneman (2011).
56 Victim Support (2011).
57 Franklin (2013).
58 Hunter, Jacobson and Kirby (2013).

victimisation.[59] Employing new technologies to radically improve the experiences of victims, witnesses and offenders is therefore not only desirable, but fundamentally necessary.

Current processes also appear to treat users as evidence and inanimate objects, rather than individuals who are emotionally involved with proceedings. Witnesses often lose control of their written evidence once it is submitted, and both victims and witnesses are frequently unable to gain access to their own statements – despite the fact that offenders can access their submissions and other evidence against them.

In some cases, there may be a legitimate concern about data security and a fear of hacking, which prevent users from directly accessing evidence. An automated email, however, (following the submission of the relevant contact information) which contained digital copies of the relevant evidence (most likely in the form of a PDF attachment) could be one way to balance the need to give users speedy access to files with maintaining the security of government systems. With the right security steps built in, this type of arrangement would actually improve – rather than reduce – data security, as posting documents relies on the correct addresses being kept on file for victims and witnesses. Given the scale of justice services these types of administrative updates are not always completed.

Looking ahead, it is vital that meeting the government's efficiency targets does not come at the cost of lower victim satisfaction and poorer case outcomes. This means digitisation must be used to provide better services which are tailored to individuals' needs and not simply to support a cheaper; 'one-size-fits-all' solution.[60]

Video links for example, appear likely to grow in popularity – particularly given that they seem be well-liked with PCCs.[61] If used appropriately, this increase in usage will be advantageous for both citizens and the state. However, without consideration of victim and witness needs, they also have the potential to damage relationships with service users. Removing the ability for willing users to opt to have their day in court, for example, may result in lower citizen satisfaction. The overarching aim must not be digitisation, but to provide citizens with both effective services and choice about how they interact with public bodies.

It is also important to remember that it is estimated that only 10 per cent of witnesses come forward and there is therefore a large population of people who may have valuable information, but that are not currently being supported or encouraged to engage with the justice system. Ensuring that current users have a more positive experience of justice processes has the potential to encourage more witnesses and victims to come forward in the future.

Finally, by failing to engage users justice agencies may not only further damage vulnerable individuals, but also significantly impact court outcomes. In 2014/15, almost a third of cases that collapsed were due to issues directly related to victim and witness.[62] This can result in diminishing public trust and in the longer term may undermine the ability of our criminal law to deter offenders through the fear of punishment.

## *Technology as a force for good*

Encouragingly, despite these challenges there are a number of digital initiatives which have the potential to help place citizens back at the centre of criminal justice processes. First, online forums provide an important opportunity to tailor services to users' needs – including, for example, the ability to ensure case files, and other useful information, is available in multiple languages. This has the potential to reduce the cost of hiring language specialists and can also reduce delay, particularly in areas where translators are lacking.

Second, digitisation can help tailor the intensity of communication from agencies and support services.

59 Remnant (2003).

60 See Rosetti and Cumbo (2010).

61 They have, for example, already been introduced by PCCs in Cleveland, Derbyshire, Durham, Greater Manchester, Norfolk and Suffolk and Sussex.

62 Criminal Justice Joint Inspectorate (2015).

While it is clear that some victims or witnesses may require additional support and more frequent communication, it is important to acknowledge that others may require little contact. A significant cohort of citizens is increasingly happy to have a simple, transactional relationship with public services. Victims of theft, for example, may only require a crime number for insurance purposes. In addition, by handing over control to users to proactively engage with portals not only can victims and witnesses feel empowered, but the demands on practitioners will be substantially reduced.

At the other end of the spectrum, online portals can also help to refer greater numbers of individuals to support services – and much more quickly. This may provide additional help to service users for whom there will be no criminal justice outcome, but whose victimisation may have still been equally damaging.

Third, digital platforms can facilitate peer-to-peer interactions and support peer networks. Forums such as Mumsnet have been hugely successful in the context of family life and the valuable work of organisations such as User Voice, which rely on ex-offenders supporting those currently in prison or serving community sentences, has been well-documented.[63] Using technology to promote peer support could therefore prove extremely valuable. More work should be done to explore the benefits of this approach and, if appropriate, how these services could be built into the government's proposed digital solutions.

Fourth, some forms of digital evidence can help improve justice outcomes. Body-worn-video, for example, can provide a contemporaneous account of a criminal event which can easily be validated. This may help increase the number of early guilty pleas as well as ensuring that more legal challenges by defendants are based on legitimate evidential reasons rather than procedural issues. Again, this has advantages for both users and taxpayers.

In addition, applications, such as Witness Confident, which facilitate online crime reporting and evidence submission, may also help empower service users. By allowing witnesses to have more control over their own evidence, the transparency of court processes is increased and this can help to minimise frustration and anxiety.

Finally digital platforms and new forms of remote communication have the potential to support restorative practices through providing additional forums for victim/offender mediation. Videoconferencing can also make restorative justice (RJ) processes cheaper and more accessible through not requiring parties to travel to attend physical meetings. This can also allow sessions to occur more quickly due to requiring a shorter time commitment from the relevant stakeholders.

While clearly there is a need to acknowledge the instances where a face-to-face meeting is required, the use of technology can help make RJ more easily scalable. This could be hugely beneficial. Not only does evidence suggest that RJ can reduce reoffending but that it also improves victim satisfaction and wellbeing in the longer-term.[64]

Encouragingly, the Justice Select Committee has argued that the government should work towards legislation which enshrines the right for victims to access RJ.[65] Successfully securing funding to roll this out in practice, however, is heavily dependent on the current RJ system demonstrating it is able to handle much larger cohorts. Restorative justice procedures are currently very labour intensive which limits the number of cases that can be dealt with. Digitisation of restorative conferences combined with automating some forms of on-going communication between mediators and users may have therefore an important role in supporting RJ practitioners to achieve this.

Caution must of course be exercised to ensure that new technologies do not result in restorative practices being diluted or for the sessions to be taken less seriously by participants – which has been raised

63 See for example O'Brien and Robson (2016) or Schmidt (2013).

64 Shapland et al (2008).

65 House of Commons Justice Select Committee (2016).

as a concern more broadly within the context of video enabled justice.[66] To this end, attention should be paid to the existing literature on RJ to better understand what elements are key to its success – for example the existence of well-trained facilitator.[67]

### *Digital jurors*

When considering the individuals who interact and work within the CJS, it is important not to forget the role of jurors. Determining innocence or guilt for the most serious offences is a hugely important task and efforts to improve the process by which verdicts are reached should be encouraged. Here again technology may have a role to play, through both facilitating more informed decision making and providing new digital ways for jurors to hear cases.

The use of technology by jurors has long been a topic of interest, particularly in the US. Since 1993, the courtroom 21 project[68] has explored the use of a number of devices to enhance juror decision making. These have ranged from older technologies such as overhead projectors to plasma screens, digital evidence repositories, and personal tablets for reviewing evidence. Their research (as well as others[69]) suggests that the majority of jurors find deliberation room technology helpful for recalling what was said during testimonies, particularly in more complex cases where the number of pieces of evidence produced may be sizeable.[70] This has the potential to expedite the decision making process, without compromising its quality[71]. In the context of the rising number of online frauds and complex offences, for example, deliberation room technology could make a valuable contribution to improving case outcomes.

Videoconferencing may also have a role to play in this setting. While significant thought must be given as to how to ensure juror impartiality and prevent juror corruption, when proceedings are taking place remotely, there is in principle an opportunity to revolutionise the way in which court proceedings are heard. This would also eliminate the time wasted by individuals who attend court, only to not be selected for the final jury.

## Blockchain: the answer to everything?

While currently, there is a reliance on centralised and decentralised databases which require both a large central administrator and are expensive to run, a relatively new innovation, in the form of Blockchain technologies may have the potential to overhaul the way justice agencies store and share information. Blockchains are a form of distributed ledger technology (which is an innovative type of secure database) that can be replicated, shared and synchronised across multiple locations. See Figure 1.

Not only is it more secure than other ways of storing and sharing information (mainly because a breach would require multiple – rather than a single – point of failure within the network), but the fact that Blockchains can automatically reconcile updates means the reliance on lower-skilled administrative workers is reduced. In addition, despite lower costs, it also offers much greater opportunity for personalisation of services. As Melanie Swan, Founder of the Institute for Blockchain Studies argues: *"Governments could shift from being the forced one-size-fits-all 'greater good' model at present to one that can be tailored to the needs of individuals. Imagine a world of governance services as individualised as Starbucks coffee orders."*[72]

As a result of these advantages, Blockchains are increasingly being explored by international governments as well as having substantial impact within the private sector – in particular within financial services. In Estonia, where Blockchain technologies are well-established, they are now trusted to facilitate e-tax and e-voting through securely verifying citizens' records. BitHealth, an initiative in the United States, is also investigating the use of Blockchain to securely store patient health records. This is with the aim of

66 Ministry of Justice (2010).
67 Morris and Maxwell (2001).
68 Now the Center for Legal and Court Technology. See http://www.legaltechcenter.net/
69 See for example, McDonald et al. (2015) or Dixon (2011).
70 Lederer (2002).
71 Lederer (2002).
72 Swan (2015).

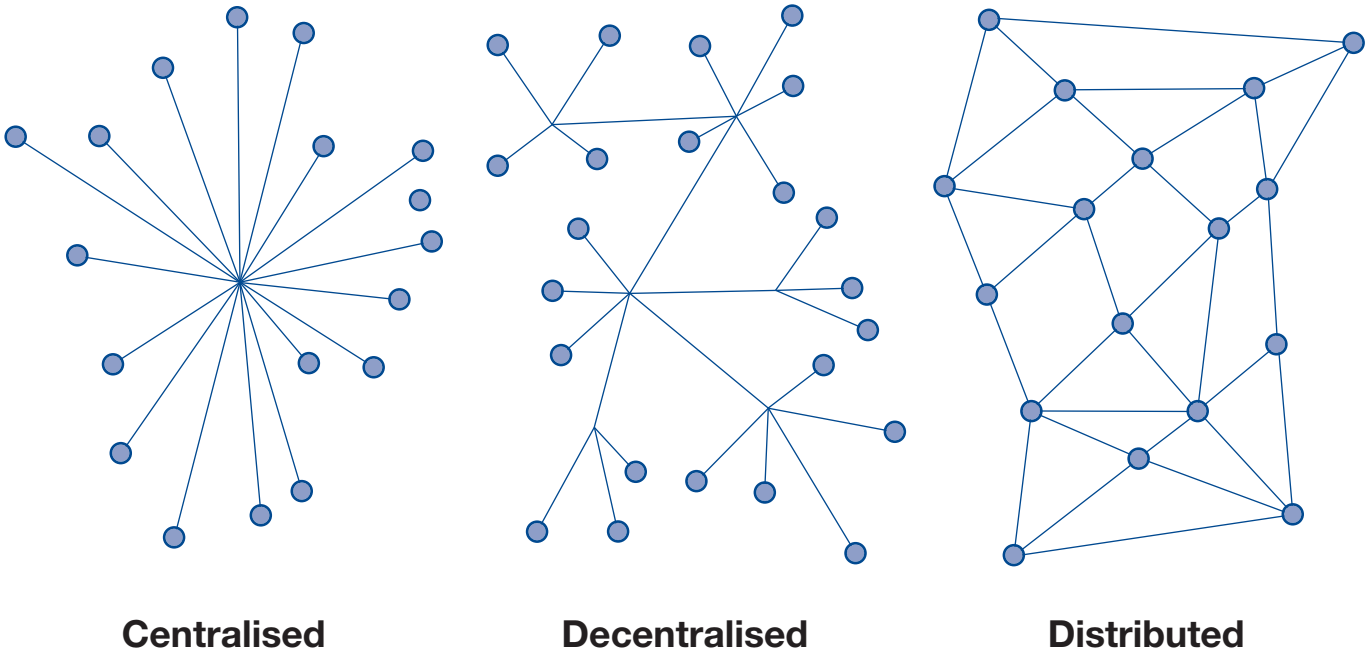


**Figure 1: Types of database**

making it easier for individuals to receive treatment internationally through greater access to their own medical history. [73]

The potential power of Blockchains has also been recognised here in England and Wales where the Department for Work and Pensions has floated prospective plans to use Blockchain to track welfare payments [74] and even claimants' expenditure patterns. [75] By providing a secure and accurate record (almost void of human error) there is the potential to minimise mistakes and improve confidence through boosting transparency. As both the Rt Hon Matthew Hancock MP and the Rt Hon Ed Vaizey MP have argued, "The technology could prove to have the capacity to deliver a new kind of trust to a wide range of services". [76]

## *Justice in chains?*

In the context of the CJS, it is theoretically possible that each and every criminal case could be logged and amended using this kind of technology. This could have a number of benefits.

Blockchains can help provide greater access to information for citizens and reduce duplication. When a record is legitimately updated, for example, changes are reflected automatically across multiple copies – often within a matter of seconds. This is even the case when information is being accessed by multiple institutions, which may help address issues of interoperability between justice agencies, as well as improving public access to data.

Second, Blockchains also allow permissions to be set at different levels creating varying access to stored information. This is an essential requirement for new systems when taking into account the sensitivity of criminal justice data.

Third, amendments, and the users responsible for them, are securely recorded within the Blockchain creating an auditable trail which can be used, for example, to identify which agencies are inaccurately editing case files or failing to provide updates. Institutions which are failing to adhere to common standards (such as those which will need to be agreed ahead of the national roll-out of the digital case file) can thus be better held to account.

In the context of improving record keeping, Blockchain also has a further advantage. Rather than relying solely

73 Deloitte (2016).
74 Evenstad (2016).
75 Society of Information Technology Management (2016).
76 Government Office for Science (2016).

on legal or regulatory rules to govern its content, Blockchains are regulated by technical code which is programmed into the software itself. Whereas breach of legal or regulatory rules results only in the potential for some form of punishment to be dealt, breach of technical codes causes an error to be returned and no activity to occur. Programmed correctly, it can be made simply impossible for misdemeanours to happen. Applied to legal case files, this can therefore prevent fields from being filled out incorrectly or missed out. These improvements to case file accuracy could not only reduce duplication, but speed up the transfer of records through the many agencies of the CJS.

Finally, and perhaps most importantly, secure Blockchain databases can facilitate additional data being placed into the public realm, enhancing transparency. Citizens would not only be able to see more easily how cases are progressing, but could also view how their personal data was being used by justice agencies. Used widely, this has the potential to create a form of 'glass government' where departments and even senior individuals are much more accountable to the public they serve.[77]

## *Smart contracts*

Building upon the storage and sharing of sensitive data, smart contracts can be added into Blockchain solutions. These are simply agreements whose terms are recorded in computer language (as part of the Blockchain) and which automatically execute when agreed conditions have been met. Within the justice space this could, where appropriate, provide a new avenue for providing victims, witnesses and offenders with automated case updates. When, for example, a specific type of update was entered into the system by prosecutors alerts could be sent digitally either via email or text message to the relevant parties (much like 'Track My Crime but on a larger scale) – without creating further work for agency employees. This would not only have the potential to improve service user satisfaction, but could also enhance agencies' abilities to adhere to the Victims' Code.[78]

Of course no new technology is without its challenges. Blockchains are a relative unknown to the vast majority of people, and this includes civil servants and justice practitioners. It is therefore essential that the correct expertise is in place within the MoJ – and the public sector more widely – in order to ensure that Blockchain technologies are procured and implemented effectively. Training will also be vital to the success of any for record management system. As the Government Office for Science has noted, 'if it is too difficult to use or does not offer the functionality required, it will not be adopted'.[79]

Improving the awareness and understanding of Blockchains is essential for ensuring the benefits of greater transparency and accountability are fully realised. Not only will service users require a level of digital know-how in order to proactively engage with their records (a barrier that has been highlighted within the context of health with initiatives such as 'Patient Online'[80]), but the terminology surrounding Blockchain has the potential to be highly confusing, and in some cases off-putting. Many people may have heard of Bitcoin (which is underpinned by Blockchain technology) – and some may be aware of associations with the dark web and other criminal transactions. This 'black market reputation' must be overhauled if the public are to trust in Blockchain applications.

In addition, while distributed ledger technologies are still viewed as less vulnerable to attacks than centralised systems, there is emerging evidence that Blockchains are far from invincible. In 2015, for example, Interpol demonstrated at a major conference that malware could be introduced into Blockchains and researchers from the University of Newcastle have also used bots to send unwelcome messages to the Bitcoin network.[81] Adequate regulation of new forms of sensitive data storage is therefore essential for the security of public data stored within Blockchain solutions.

It is also important to acknowledge that Blockchains can still fall victim to human error. While many of the

77 Government Office for Science (2016).
78 Ministry of Justice (2015c).
79 Government Office for Science (2016).
80 Greenhalgh (2015).
81 Taylor Wessing (2016).

ongoing opportunities for this to occur are removed by automation, there is still a reliance on humans to initially build new databases and correctly programme the rules and permissions which will govern both the content and access levels. This underlines once again the importance of ensuring that the correct digital skills exist within government, or can be effectively sought from external organisations.

In the face of these challenges however, and while clearly Blockchain technology is in its relative infancy, there could be significant advantages to exploring its usage in the CJS. The MoJ should work closely with the Office for Government Science and Blockchain experts within the financial sector to further evaluate the costs and benefits of these opportunities.

## Acknowledging digital exclusion

In the context of much greater use of technology, however, the potential for individuals to be digitally excluded cannot be ignored. It is estimated, for example, that there are still over 12 million people living in the UK who lack basic digital skills. Additional technical support must therefore be put in place in order to ensure equality of access to new forms of services.[82]

In addition, there are also a number of individuals who, regardless of whether they have the appropriate skills, may simply not have access to the internet or the necessary technology. Vulnerable individuals living in temporary accommodation, for example are unlikely to have access to wifi – as are those located in very rural areas. For these individuals it is very likely there will be an on-going need to provide access to service via more traditional channels. More basic forms of digital communication such as SMS messaging, for example, are accessible without internet connections, are easier to use than online platforms and have the additional benefit of being familiar to higher numbers of individuals.

Finally, cultural barriers to digital justice must be addressed.[83] According to the Institute for Government, while four out of five adults in Great Britain use the internet every day, only two-thirds have ever transacted online with the government[84] – and much of this will be in the processes like online driver licence renewal rather than 'core' public services. This highlights the clear divide between the use of technology for work or pleasure and the reliance on paper-based processes in the context of public services. Research has also suggested that regardless of the ability to access online platforms, individuals (even when aged 18-24) may still prefer traditional methods of communication when interacting with public services.[85]

Changing this culture will no doubt take time, but will also require government platforms to offer the same, if not better, functionality than private sector comparators. It may also be beneficial if new digital services are promoted on platforms that are already being used regularly by target audiences – in particular social media platforms which see the most consistent usage and are available across a number of devices.

## Litigants in person

Alongside a significant population of people lacking digital skills, there is also a growing cohort of individuals who do not have legal representation. This, again, has important implications for the way in which digital platforms and services are designed and implemented.

There is the potential for the government's flagship digital initiative – the Common Platform Programme – for example, to be unfair to unrepresented defendants. Currently, LIPs are not given access to digital case files and instead continue to be sent a paper version. This means they will often receive information much later than opposing counsel – and sometimes very close to the trial. This means there is the potential for digitisation to result in an inequality of access for litigants in person. Here, again PDF documents could be used in order to speed up the

82 Tinder Foundation (2016). Now known as Good Things Foundation.
83 Smith and Paterson (2014).
84 Andrews et al. (2016).
85 Smith and Paterson (2014).

transfer of information without allowing users direct access to government systems.

In addition, in the context of online plea platforms, there is the potential for ill-informed users to make incorrect submissions without fully understanding the consequences of their actions. Previous research has shown that often LIPs do not understand their guilt or innocence in legal terms, and even commonplace low-level offences can have a viable defence which users are unlikely to know about.[86]

This is not to say that an online plea platform is not desirable. Of course, it was acknowledged that it is likely that there are still a substantial number of straight-forward cases, where guilt has clearly been established, that are well-suited to online plea submission. It is however vital that policymakers ensure that the system works well for all types of individuals and provides appropriate support for those who are unsure of their legal position. This will be challenging in the context of further cuts to legal aid.

To address this, and the potential for a high number of appeals, we suggest that the government should consider the introduction of a 'cooling-off' period between the original plea and resulting conviction.[87] In light of the prevalence of poor public legal knowledge, providing defendants with time to consider their submission would seemingly allow for a more just system.

86 Transform Justice (2016).

87 This idea is not new and previously a period of seven days has been suggested. See Rosenberg (2016).

# Conclusion

The scale of justice services alone will make achieving effective digital transformation a sizeable challenge. Without the correct leadership across agencies and adequate digital training for staff, new technologies will simply fail to realise their potential – squandering vital resources in a time of financial restraint.

Encouragingly, our engagement with justice experts through this project showed that there is an overwhelming sense that digitisation offers significant opportunities to radically improve services – most notably by providing citizens with more opportunities to self-serve and using digital platforms to boost communication with service users. However, there was a clear message that there is also a need to rigorously assess the support structures that should be put in place to ensure the digitally excluded and those without legal representation have equality of access to 21st century justice.

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