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Crime and information

Using data and technology to transform criminal-justice services

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March 2018

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Reform

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Criminal-justice services in England and Wales are on the verge of disruption. The Government aims to digitise courts and transform rehabilitation services to deliver swift and accurate justice, reduce reoffending and protect the public.[1] Data analytics and new technology, including video captured evidence and online courts, can transform the way police forces, courts, prisons and probation services protect the public, deliver justice and rehabilitate offenders.

Making this a reality requires effective sharing and use of data by criminal-justice services – from the evidence collected by police forces to NHS data on health. These data are already collected by public services but held in silos; immediate access to permitted information by different services, from courts to probation providers, can help speed up the delivery of justice and tailor rehabilitation to offenders' needs. As John Manzoni, Permanent Secretary for the Cabinet Office, argued in 2017, data are the "lifeblood of twenty-first century government".[2]

Government reform aims for criminal-justice services

The Government aims to reform police and justice services. It hopes to deliver two outcomes:

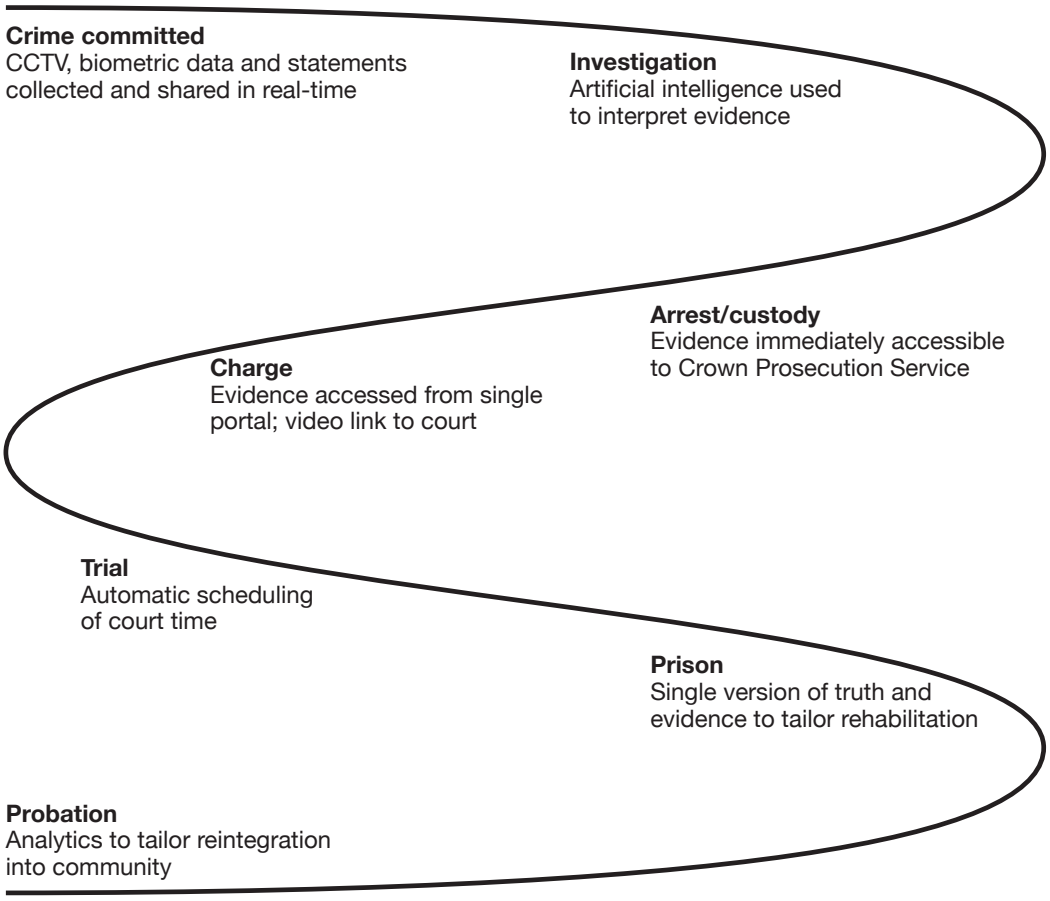
- **Greater efficiency:** The Government believes that police officers and staff can collect and share evidence, investigate individuals and share information with the Crown Prosecution Service (CPS) and courts through digital data sharing.[3] The Ministry of Justice calculates that reoffending costs society £15 billion a year.[4]
- **Transformative justice services:** The Home Office hopes to provide police forces with the digital tools and skills to meet crime and protect the public in "the digital age".[5] David Gauke, Secretary of State for Justice, believes that prisons can act as "a route to a better life" through tailored rehabilitation services and integrating ex-offenders into the community.[6] The Government states that the purpose of transforming these services is to protect the public and help ex-offenders become contributing members of society.[7]

Transforming criminal justice through technology

Better access to data by service providers on those in the criminal-justice system could help achieve these aims. These data could feed cutting-edge technologies to help police forces collect and share evidence, enable courts to make more efficient use of time and provide prisons and probation providers with the tools to tailor rehabilitation services and integrate ex-offenders into the community (see Figure 1). Underpinning this should be an IT infrastructure from which all providers can access the appropriate data.

1 David Gauke, *Prisons Reform Speech*, 2018; Sam Trendall, 'Interview: The Crown Prosecution Service's Digital Transformation Chief on His "User-Centric" Mission', PublicTechnology.net, 17 July 2017.
2 John Manzoni, 'Big Data in Government: The Challenges and Opportunities', Speech, 21 February 2017.
3 Crown Prosecution Service, *2017/18 Business Plan and CPS 2020*, 2017.
4 Gauke, *Prisons Reform Speech*.
5 Nick Hurd, 'Equipping the next Generation of Officers', in New Statesman, *Digital Policing: The Path to 2025*, 2018.
6 Gauke, *Prisons Reform Speech*.
7 Ibid.

Figure 1: High-tech justice



A common data infrastructure

As individuals move through the criminal justice system, data on crime, court hearings and prison behaviour, are recorded. This information can underpin decision making, such as sentencing and rehabilitation programmes.

Creating a common data infrastructure where information can be securely stored and accessed at critical moments could help criminal-justice services act quickly and help service providers deliver appropriate interventions, such as rehabilitation services. The Government has started down this road with its Common Platform, which it aims to implement in 2019. The Common Platform will introduce a single case-management system, including a "digital case file". Digital case files are opened when the police gather evidence, which is then provided to the CPS, judiciary, defence and courts.[8]

This is an important step, but government could go further. Extending the Common Platform to prisons could provide the information needed on offenders to understand prisoner needs and help design appropriate programmes for rehabilitation. This would require clear rules on which data can be accessed by which service to protect data privacy under legislation. But Stephen Mold, Northamptonshire Police and Crime Commissioner, believes the cultural barriers to sharing data are greater than legal, as the criminal justice system operates largely in silos and public servants are wary of sharing data they are not sure can be legally shared.

Shifting to cloud storage would be the "biggest evolution in a generation", according to Mold. It could allow access to permissioned information from one portal – helping

8 National Audit Office, *Efficiency in the Criminal Justice System*, 2016, 38.

overcome today's reticence to share proactively. Access to these data could be provided by 'keys' for different services and people based on information-sharing agreements and in line with legislation.[9]

All interviewees argued it is crucial that each member of the criminal-justice system works to achieve outcomes for the good of the whole system to meet the Government's aims of more efficient and effective services. IT is a common denominator here: previous police force updates have led to them being incompatible with CPS and HM Courts and Tribunal Service systems in the past.[10] A digital case-management system could help avoid recent problems with disclosure of evidence, but also requires, as Surrey's Chief Constable Nick Ephgrave recently acknowledged, police officers to see disclosure as "integral" to an investigation.[11]

Policing: transforming investigation and prosecution

With the right infrastructure in place, data could be securely accessed and shared to help transform service delivery. At the front end is policing. Police forces could use new technology to collect, investigate and share evidence, within and between forces and with the wider criminal-justice system.

Crime is changing. Over 50 per cent involves online elements.[12] Police forces now have access to broader evidence sources, such as social media, body-worn cameras and smart devices. At the extreme, an average terrorism case involves 4 terabytes of data, with some topping 20 terabytes, or the equivalent of 10 billion pages.[13]

Police forces can collect, analyse and share data more effectively. Durham Constabulary shares information automatically through an intelligence tool which captures online information, such as social-media evidence, through 24/7 automatic surveillance, and creates standardised reports which are shared electronically with courts.[14] Forces could explore how this can be widened to include CCTV, recorded interviews, body-worn camera information and interviews, in line with police and courts inspectorates' recommendations.[15] South Wales and Gwent police forces use the app I-Patrol to capture video and audio evidence from crime scenes.[16] The forces anticipate this will free up 10 per cent of police time, and more efficiently share information with courts.[17]

Police forces could analyse these data using cutting-edge algorithms and artificial intelligence (AI) to more accurately investigate crimes and free up valuable police time. West Midlands Police has created an "Analytics Lab" to comb through 1 terabyte of data to help identify and disrupt criminal networks.[18] The New York Police Department has developed software capable of analysing different types of media, such as CCTV and number plates recognition technology (in real-time) to cross-reference data to determine whether someone is wanted by the police.[19] For extreme cases, the Home Office is in the process of implementing machine-learning technology which analyses online videos to determine whether it is terrorist propaganda – detecting 94 per cent of propaganda with 99.995 per cent accuracy.[20]

9 Sarah Timmis, Emilie Sundorph, and Alexander Hitchcock, *Frontline Online. Smarter Blue Light Services* (*Reform,* 2018).
10 Her Majesty's Inspectorate of Policing and Her Majesty's Crown Prosecution Service Inspectorate, *Delivering Justice in a Digital Age: A Joint Inspection of Digital Case Preparation in the Criminal Justice System*, 2016.
11 BBC News, 'Hundreds of Court Cases Axed over Failings', *BBC News Online*, 24 January 2018.
12 National Cyber Security Centre and National Crime Agency, *The Cyber Threat to UK Business*, 2017.
13 Jeremy Wright, 'Attorney General's Speech at the International Justice Day Event', 17 July 2017.
14 Alexander Hitchcock, Ruby Holmes, and Emilie Sundorph, *Bobbies on the Net: A Police Workforce for the Digital Age*, (*Reform*, 2017) 21–22.
15 Her Majesty's Inspectorate of Policing and Her Majesty's Crown Prosecution Service Inspectorate, *Delivering Justice in a Digital Age: A Joint Inspection of Digital Case Preparation in the Criminal Justice System*, 6.
16 Rene Millman, 'South Wales Police and Gwent Police Replace Notebooks with I-Patrol App', PublicTechnology.net, 22 February 2016.
17 Ibid.
18 West Midlands Police, *Data Driven Insight & Data Science Capability for UK Law Enforcement*, 2017.
19 Alexander Babuta, *Big Data and Policing. An Assessment of Law Enforcement Requirements, Expectations and Priorities* (RUSI, 2017).
20 Home Office, 'New Technology Revealed to Help Fight Terrorist Content Online', Press Release,13 February 2018.

English and Welsh police forces could also use digital channels to transform the way they interact with citizens. 'Track my Crime', developed by Avon and Somerset Police, and now used by 14 forces, provides information for victims and witnesses of crimes online, with automatic alerts sent via text or email.[21] This is the type of digital engagement that citizens are starting to expect from government.[22]

Digital courts

Collecting and sharing these data digitally can transform the delivery of justice. Chief Constable Stephen Kavanagh envisages a world in which immediate access to information allows the Crown Prosecution Service to reach a charging decision within a day. This is more efficient than the current average of 107 days between the offence and charge.[23] Sharing these data between police forces, courts and thereafter prisons and probation providers would require a more effective IT infrastructure.

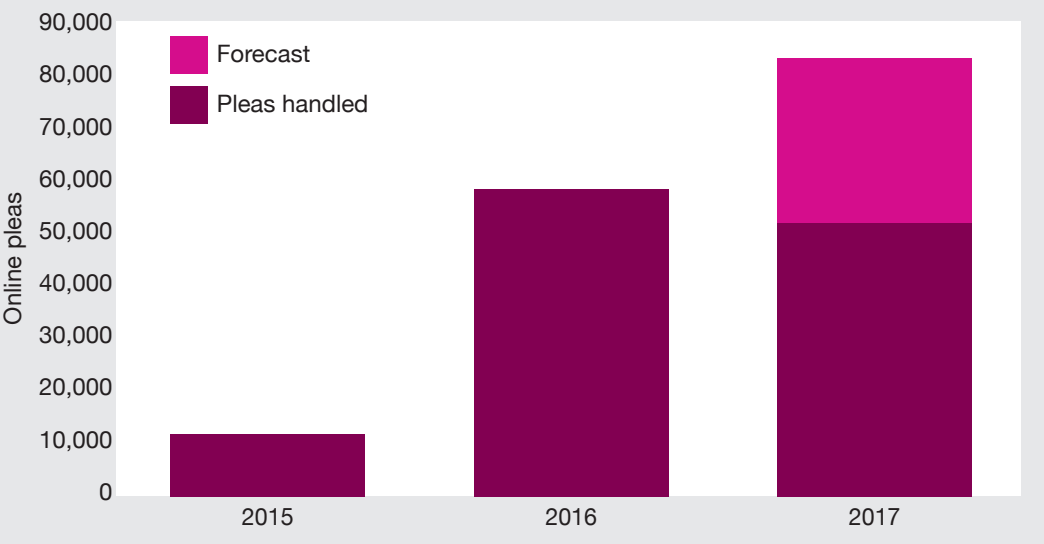
Better access to data can enable a more accurate scheduling of court time. Currently it takes 28 days from charge to first listing in a magistrates' court.[24] The biggest reason for "ineffective" (delayed) magistrates' courts trials is court administration (30 per cent of ineffective trials); the proportion for crown courts is 25 per cent.[25] Singapore has automated its court proceedings to share all information required for the initiation, scheduling, processing, hearing and tracking of cases from the case being filed to its verdict.[26] Elsewhere, AI has been used in hospitals to improve the efficiency and accuracy of scheduling operations.[27] This approach could be applied to courts to automate the scheduling system.

Access to magistrates' courts can then be transformed by video technology. This technology could free the time of police officers, court staff and defendants: virtual magistrates' courts, as trialled in Sussex, could reduce the average stay in custody by five hours per defendant and release 18 per cent of the magistrates' court estate.[28]

Online courts can similarly improve the delivery of justice. The Government is piloting a 'Make a Plea' programme, which allows people to submit pleas from afar for traffic offences. This is increasingly popular with the public (see Figure 2).

21 Ministry of Justice, 'Track My Crime', Webpage, 2018.
22 Adobe, *Delivering Experiences That Count. Global Survey Results and Insights on Digital Citizen Services*, 2018.
23 Ministry of Justice, *Proven Reoffending Statistics*, 2018.
24 Ibid.
25 Court administrative problems covers all trials that are ineffective due to 'Another case over-ran', 'Judge / magistrate availability', 'Case not reached / insufficient cases drop out / floater not reached', 'Equipment / accommodation failure', 'Insufficient jurors available', 'Outstanding committals in a Magistrates' Court' and 'Outstanding committals in other Crown Court centre'. Ministry of Justice, *Criminal Court Statistics Quarterly, England and Wales, January to March 2017*, 2017.
26 Infocomm Media Development Authority, 'Transforming the Criminal Justice Landscape in Singapore', Webpage, 3 November 2017.
27 Professor Dame Wendy Hall and Jérôme Pesenti, *Growing the Artificial Intelligence Industry in the UK* (Department for Digital, Culture, Media & Sport and Department for Business, Energy & Industrial Strategy, 2017).
28 William Mosseri-Marlio and Charlotte Pickles, *The Future of Public Services: Digital Justice* (*Reform*, 2016).

Figure 2: Online courts: make a plea



Source: HM Courts and Tribunal Service, and Ministry of Justice, 'Making a plea online for traffic offences has got easier', *Inside HMCTS*, 17 August 2017.

Prisons: protecting the public and transforming rehabilitation

Secure access to information could help create safer prisons and transform the way rehabilitation is delivered – at an earlier stage and tailored to individual's needs.

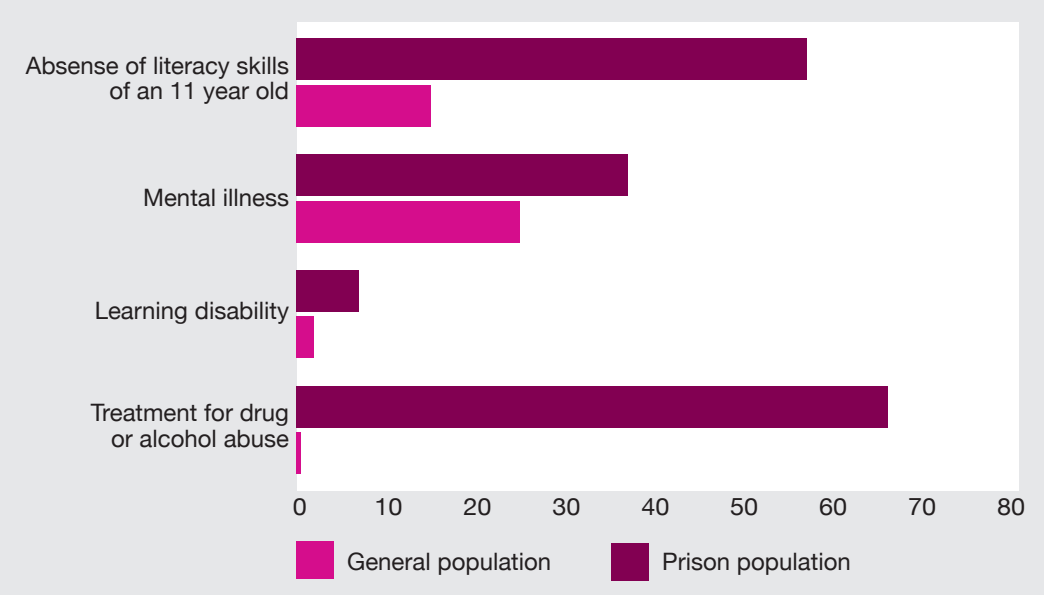
Better access to data allows prisons to fill their basic purpose of protecting the public. Information errors led to 505 inmates being released by mistake over the last decade to 2014-15.[29] Data shared from a source containing a single 'truth' could help avoid these mistakes.

Better information on offenders coming into prisons can also help protect prison officers and staff. Ian Mulholland, Managing Director of Public Services at Interserve, argues that "very often prison governors know almost nothing of the person remanded in custody". According to Russ Trent, Governor at HMP Berwyn, receiving "relevant and recent information" on custodial behaviour would uncover valuable trends in individuals' characteristics as they have moved through the criminal-justice system. For example, information on prisoners with a history of violence in custody could help prison governors design interventions to reduce assaults on prison staff, which rose 43 per cent between 2015 and 2016.[30]

Access to wider information about the complex health, social and education needs of prisoners could help prisons deliver tailored rehabilitation programmes. Prisoners have a greater prevalence of complex needs than the general population (see Fig 3). Many have a combination of these issues.[31] The NAO reports that better awareness of mental health in prisons through data collection and analysis would help plan services and monitor outcomes to support prisoners.[32] The Singapore Prison Service analyses data on risk patterns, family issues and attendance records of inmates at counselling sessions to tailor appropriate rehabilitative interventions within prison, according to the risks and needs of the inmates.[33] Such services could help meet David Gauke's aim of prisons being "places of humanity, hope and aspiration" where prisoners "know that there is a route to a better life".[34]

29 BBC News, '"Hundreds of Inmates" Released in Error', 28 December 2015.
30 Ministry of Justice, *Prison Safety and Reform*, 2016.
31 National Audit Office, *Mental Health in Prisons, 2017.*
32 Ibid.
33 Kenneth Ng, 'Prisons Turn to Data Analytics for Prisoner Rehab in Singapore', *South China Morning Post*, 14 April 2017.
34 Gauke, *Prisons Reform Speech*.

Figure 3: Complex needs of prison population versus the public, 2016-2017



Sources: Prison Reform Trust, *Prison: The Facts. Bromley Briefings Summer 2017*, 2017, National Audit Office, *Mental Health in Prisons*, 2017. Public Health England, *Adult Substance Misuse Statistics from the National Drug Treatment Monitoring System (NDTMS)*, 2017. Public Health England, *Secure Setting Statistics from the National Drug Treatment Monitoring System (NDTMS)*, 2017.

Note: *Reform* calculations from above sources for treatment for drug and alcohol use.

Probation services: transforming reintegration

Better information on offenders, including health, employment and education data, could help probation providers tailor approaches to reintegrate offenders back into society.

The Government hopes to deliver effective rehabilitation through its Transforming Rehabilitation programme, in which 21 Community Rehabilitation Companies offer probation services for "low to medium-risk" offenders and a National Probation Service for offenders that spend 12 months or more in custody.

Access to the right data, including the programmes delivered in prison, could help integrate offenders into society more effectively. For example, a rehabilitation pilot in Peterborough used data to identify important patterns in reoffending behaviour. For one reoffender, who had been imprisoned 150 times and displayed anti-social behaviour every year on the anniversary of his wife's death leading to issues of cyclical reoffending, increased support and counselling around that time of year helped keep him out of prison.[35] Data scientists behind the Peterborough pilot developed the programme to include information from 10 different services, such as legal and immigration advice, employment training and mental health support, to provide tailored rehabilitation programmes.[36]

These data should be combined with evidence as to what works to most effectively deliver the best outcomes for ex-offenders. If not, probation services risk "optimising a non-optimal system", according to Lisa Barrett, Director of Data-Driven Department and Culture Change at the Ministry of Justice. Barrett points to the volumes of research on rehabilitation approaches, spanning criminal justice, healthcare and employment, but also including breakthroughs in scientific understanding of what motivates people and affects wellbeing.

35 Dan Miodovnik, 'Data Story—The Peterborough Social Impact Bond', *Medium*, 24 August 2017.
36 Ibid.

Barrett argues that probation officers cannot be expected to navigate every report and concept to provide effective interventions and identifies computer programmes and apps as providing opportunities to link data and evidence to help design tailor rehabilitation to needs. This could follow pioneering technology in other public services, such as healthcare. For example, IBM's Watson, which can read 40 million documents in 15 seconds, uses this information to collate and share the 160 hours of medical knowledge published each week to help clinicians make diagnoses.[37]

Conclusion

The Government has important ambitions to deliver digital justice and high-quality rehabilitation programmes to protect the public and swiftly and accurately dispense justice. Data are the backbone of delivering this outcomes-focused system. A digital platform where the right people can securely access and share information at critical moments can integrate organisations and foster joint approaches to justice that support the user. As individuals move from police right through to probation, secure access to data can deliver the right services for users, enhance efficiencies and transform rehabilitation outcomes. Used accordingly, data have the power to deliver a first-class criminal justice system fit for the modern age.

37 Ian Steadman, 'IBM's Watson Is Better at Diagnosing Cancer than Human Doctors', *WIRED UK*, 2 November 2013.

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