



VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

*Shaping the techno-social landscape of corrections:
How values, technology, and culture influence the
design of correctional service delivery applications*

This is the Published version of the following publication

Ross, Stuart, Wood, Mark A, Baird, Ronald and Lundberg, Kajsa (2024)
Shaping the techno-social landscape of corrections: How values, technology,
and culture influence the design of correctional service delivery applications.
Journal of Criminology, 57 (2). ISSN 2633-8076

The publisher's official version can be found at
<http://dx.doi.org/10.1177/26338076241255530>
Note that access to this version may require subscription.

Downloaded from VU Research Repository <https://vuir.vu.edu.au/48149/>



Shaping the techno-social landscape of corrections: How values, technology, and culture influence the design of correctional service delivery applications

Journal of Criminology

1–19

© The Author(s) 2024



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/26338076241255530

journals.sagepub.com/home/anj**Stuart Ross** 

School of Social & Political Sciences, University of Melbourne, VIC, Australia

Mark A Wood 

School of Humanities & Social Sciences, Deakin University, VIC, Australia

Ron Baird

College of Arts & Education, Victoria University, VIC, Australia

Kajsa Lundberg 

School of Social & Political Sciences, University of Melbourne, VIC, Australia

Abstract

Over the past decade, a variety of digital platforms have emerged to deliver core correctional services. Understanding the challenges and drivers of correctional agencies' digitalisation helps us to understand the processes that shape these technologies and their impact on correctional environments and practices. To bridge this gap, we conducted interviews with 26 software developers and other stakeholders involved in the digitalisation of corrections, aiming to explore the challenges encountered in designing and implementing digital service delivery technologies for correctional services. Our findings shed light on some key challenges faced by software developers and other stakeholders involved in the design process, including institutional culture, justice system bureaucracy, and public perceptions. These challenges significantly influence design processes and the availability of digital products for end users. They

Corresponding author:

Mark A Wood, School of Humanities and Social Sciences, Deakin University, 221 Burwood Highway, Burwood, VIC 3125, Australia.

Email: mark.wood@deakin.edu.au

shape the techno-social landscape of correctional agencies and contribute to the dominance or absence of certain digital platforms or artefacts.

Keywords

Prison technologies, technological development, software design

Date received: 13 July 2023; accepted: 2 May 2024

Introduction

Although the corrections sector once lagged behind other government services in digital innovation and adoption (Jewkes & Johnston, 2009; Kaun & Stiernstedt, 2022), prisons and community corrections agencies are now undergoing a wave of digitalisation (Knight & Van De Steen, 2017).¹ This digitalisation can be divided into two primary streams. The first focuses on security and surveillance, encompassing facial recognition systems (McKay, 2022), electronic monitoring (Nellis, 2016), and forms of “dataveillance” that leverage personal data systems and information communication technologies to monitor individuals’ actions and communications (Reisdorf & DeCook, 2021; see Clarke, 1988). Our focus is on the second stream, which involves digital modes of service delivery such as prison education, vocational training, mental health services, rehabilitation, and re-entry support. The digital technologies involved include videoconferencing platforms, self-service kiosks, mobile and in-cell tablets, learning management systems, mHealth apps, and virtual reality programmes (Ross et al., 2023b; Smeijers et al., 2021).

Research has explored the implementation, efficacy, and impact of correctional digital service delivery in various areas, including substance abuse treatments, digital education, tele-psychiatry, tele-psychology, and kiosks/in-cell tablets (Chaple et al., 2016; Elison-Davies et al., 2021; Lerch et al., 2017; Robberechts & Beyens, 2020). The COVID-19 pandemic has further accelerated the adoption of videoconferencing platforms (Lerch et al., 2017) and remote service delivery in correctional settings (Ross et al., 2023a). While there remain important unanswered questions about the efficacy and impact of these applications, it is evident that digital technologies play a significant role in correctional service delivery.

What is less clear is what is driving this wave of digitalisation of correctional services, and why we see the array of applications and platforms currently available or under development. The digitalisation of corrections can take a variety of forms. Some jurisdictions have consciously adopted a strategy of digital transformation, where the adoption of digital services provides the basis for a reconceptualisation of correctional regimes (Puolakka, 2021; Robberechts & Beyens, 2020). More commonly, digital applications have been integrated into existing service delivery or rehabilitation models. In many cases, existing service models have been digitalised with little modification, although there are also instances of applications designed specifically for corrections, as well as instances of co-design of both applications and service approaches (Morris & Knight, 2018). Clearly, the need to respond to the COVID pandemic has been a significant factor, although it should be noted that all the digital tools that were widely adopted during the pandemic were already being used in some form. In general, the design and

policy processes that underpin the selection, development, and adaptation of correctional digital applications have not been extensively researched. Therefore, it is crucial to examine these processes and gain insights into the challenges faced by stakeholders, including software developers, who have been involved in designing digital applications for correctional agencies.

In this article, we examine the findings of research on the programmatic, technical, and policy drivers that shape the design and implementation of digital applications for corrections. The research was based on interviews with an international sample of stakeholders involved in developing digital applications for correctional service delivery in the United Kingdom, United States, Belgium, Australia, Sweden, Finland, and Aotearoa New Zealand. Our findings shed light on some key challenges encountered in designing or adapting digital applications for correctional services: the scarcity of appropriate content, problems in navigating institutional culture and justice system bureaucracy, the limitations imposed by public perceptions about correctional digitalisation, and the difficulty of supporting innovation. These challenges influence design processes and the availability of digital products for end users. They shape the techno-social landscape of correctional agencies, contributing to the presence or absence of certain digital platforms or artefacts. By understanding the barriers and drivers that shape the design, adoption, and rejection of digital technologies in correctional settings, we gain insights into the techno-social reproduction of correctional agencies as institutions. An important component of the research was simply to document who is involved in this process of correctional digitalisation and the article includes a discussion of who is involved in the different development pathways for correctional software.

Digitalisation in corrections: drivers and barriers

The digitalisation of corrections is one facet of the broader digital transformation of government functions and services, known as e-government. e-Government involves diverse digital platforms and techniques that vary in extent across countries and government sectors (Homburg, 2018; Janowski, 2015; United Nations Department of Economic and Social Affairs, 2022). Proponents of e-government claim benefits such as improved managerial effectiveness, service access, and promotion of democratic values (Meijer & Bekkers, 2015). However, it is also associated with detrimental consequences, including privacy intrusions, increased control over citizens, and digital inequality (Kempeneer & Heylen, 2023; Sundberg, 2019). Its tangible benefits to communities are described as “disproportionate and uneven” (United Nations Department of Economic and Social Affairs, 2022, p. xxiii).

The research literature on e-government identifies two general influences that drive the digital transformation of government: one derived from the technology itself, and the second from the policy contexts and processes being digitised. A reductive “technological determinist” view of e-government assumes that (digital) technology provides solutions to a range of problems and challenges of government (Homburg, 2018). A corollary of this technological determinist perspective is the idea of “innovation” as a desirable attribute of e-government systems. Nonetheless, as this article demonstrates, there are a range of barriers associated with technologies that come to complicate the idea of “technological determinism” and technology’s innovative potential.

How technology shapes the digitalisation of corrections

The digitalisation of correctional service delivery involves specialised treatment, rehabilitative, educational, and support services that align with digital advancements in sectors like security, education, health, and mental health (Ross et al., 2023b). Mainstream digital communication platforms also play a significant role, highlighted by the adoption of digitally facilitated communication channels that link incarcerated individuals with the outside world. To understand the driving forces behind the wave of digitalisation in corrections, we must consider the role of technology and its relationship to policy and programme reform, while recognising the distinct organisational, systemic, and service demand characteristics of the corrections environment.

The technology underlying the e-government exhibits rapid development of platforms and devices, along with the integration of digital interactions into diverse cultural, political, economic, and social activities (Janowski, 2015). In contrast, prisons, and to a lesser extent community corrections, embody a “command and control, punishment-oriented culture” that has generally resisted practice reforms (Lerch et al., 2011). Knight and Van de Steene (2017) caution against automatically labelling the introduction of digital technologies to prison settings as innovative since these settings inherently restrict and deprive their community of communicative opportunities. Within criminology, there has been a notable lack of critical reflection on the meaning and consequences of innovation, as observed by Graham and White (2016, p. 268). However, Kaun and Stiernstedt (2022, p. 79) present a contrasting perspective, suggesting that prisons are often seen as institutions that are technologically lagging behind, which motivates “unorthodox collaborations” between tech companies and corrections agencies to catch up and radically transform the sector through technological innovations. In this view, prisons can be considered as “test beds” for technological innovations, including smart technologies (2022, p. 80).

Existing criminological literature on correctional digitalisation primarily focuses on technical, structural, and cultural barriers that either facilitate or hinder the implementation of systems and applications. Notably, the interaction between digital innovations and organisational practices, structures, and norms has been a major concern. Correctional organisational culture emphasises security, which generally impedes the adoption of digital technologies, particularly those involving the Internet (Jewkes & Johnston, 2009; Reisdorf & Rickard, 2018). Providing digital access to prisoners presents logistical challenges, as do the restrictions imposed by prison operating regimes (Davies et al., 2017). The implementation of community correctional services in a multi-agency context introduces additional barriers (Link & Reece, 2021). Other implementation barriers include limited digital capability, installation and operational costs, concerns regarding prisoners’ rights, implications for staff workload, security concerns, and general apprehension and unease regarding the introduction of digital communication technologies (Knight, 2015).

Correctional digitalisation and policy reform

The conservative nature of correctional systems poses a significant risk that technology-driven developments will overshadow values (Sundberg, 2019), and that digitalisation will merely reinforce existing policy settings along with their associated inequalities

and oppressions (see McNeill, 2018; Nellis, 2016). Therefore, it is crucial to examine the relationship between the drivers of digitalisation and policy and programme reform, as well as the underlying values. More specifically, we need to ask whether there is an opportunity for digitalisation to yield a more open, ethical, and less damaging form of correctional intervention.

The potential for digitalisation to support correctional reform has been examined by Van De Steen and Knight (2017, p. 256) who comment that “the inevitability of digital transformation is set to shape the way justice is done and experienced” and argue for the “translation of an offender-centric prison policy into technology design where the offender is a user, a customer, an active participant”. The digital needs of offenders are also at the core of Reisdorf and Rickard’s (2018) proposals for the development of a new model of digital rehabilitation and re-entry that leverages the power of digital technologies to support education, employment, healthcare, social relationships, and leisure activities, while also addressing the digital exclusion experienced by returning citizens. Another important theme in this space is the potential for digitalisation to incorporate co-production and user-driven design of content and functions (Morris & Graham, 2019).

At a governmental and institutional level, the corrections sector is still grappling with the policy and practice implications of digitalising services. Correctional digital policy focuses on efficient and effective delivery of rehabilitative services, as well as exploring new treatment and educational techniques like augmented reality (AR) or virtual reality (VR). Some European countries, such as Belgium (Robberechts & Beyens, 2020) and Finland (Puolakka, 2021), have adopted the idea that prisoners have a right to digital access for services, information, and communication based on principles of normality and equality. Further, the COVID-19 pandemic has accelerated the shift to digital service delivery in corrections, while also presenting policy and practice challenges (Ross et al., 2023a).

The present study

Amidst these developments, there remains a dearth of research that delves into the perspectives of the individuals responsible for designing the technologies driving correctional digitalisation. Understanding the views of those involved in software development about the challenges and drivers of correctional agencies’ digitalisation sheds light on the constraints they face and the design models they employ. These design processes shape the technologies themselves, influencing their impact on correctional environments and practices. Gaining insights into the challenges encountered while designing for corrections can inform policies that promote the development of accessible, beneficial, and ethical technologies. To that end, we conducted 20 interviews with a total of 26 correctional digitalisation stakeholders to examine the following research question: What are the key challenges associated with designing and implementing digital service delivery applications for correctional agencies? These interviews were conducted as part of a wider study of digital developments in corrections with the support of Criminology Research Council Grant 08/20-21.² The interviews examined the processes and considerations involved in designing digital applications for corrections services, including known and potential challenges.

Methods

To address this question, we conducted a basic qualitative research study (Merriam & Tisdell, 2015, p. 42), interviewing stakeholders involved in the design or implementation of digital applications for corrections. Stakeholders in software development were purposively sampled based on a scoping review conducted by the researchers (Ross et al., 2023b). Additional stakeholders were identified through a snowball sampling approach (Noy, 2008) based on referrals from existing participants. All interviews were conducted remotely via Zoom. Interviews were from 30 and 60 min and included questions on participants' professional background, role, and experience in designing digital applications for corrections, and the design and application development methods and approaches used. Participants were also asked about challenges they had encountered including regulatory and policy requirements, data privacy considerations, and usability issues. We aimed for participant heterogeneity by engaging stakeholders from different countries and working on various forms of digital service delivery applications.

Sample: Who is involved in the digitalisation of corrections?

There are two main groups involved in the digitalisation of corrections – corrections agencies and software development specialists – and this arrangement gives rise to two primary development pathways for correctional digitalisation. In the first pathway, corrections agencies either design and build or adapt applications “in-house” or engage information and communications technology (ICT) or software design specialists to develop an application to specifications set by the agency. The second pathway involves the creation of an application by a software development team (which may be an ICT business, a non-government organisation (NGO) or a research group) that is then adopted by one or more corrections agencies. In practice, there are often complex and ongoing relationships between these two groups, and the development of a specific application may not fit neatly into either of these pathways. Some corrections agencies have established their own digital development capacity: examples include the creation of the PrisonCloud platform by the Belgian Prison Services (Robberechts & Beyens, 2020) or the Digital Studio within the U.K. Probation and Parole Service (Morris & Bans, 2018), or have adapted apps developed in another jurisdiction or context (McGreevy, 2017). Alternatively, some software development teams begin by creating an app in a non-correctional context and then subsequently establish a relationship with a corrections agency – examples include the Therapeutic Education System (Chaple et al., 2016) and Breaking Free Online (Weekes et al., 2017).

In total, we interviewed 26 people in 20 interview sessions, of whom just under half (11) were women. Our interview participants reflected the multi-faceted nature of the digitalisation of corrections. The largest sub-group (eight participants) were in application development roles within corrections agencies and were drawn from seven agencies in six countries (the United Kingdom, Belgium, Australia, Sweden, Finland, and Aotearoa New Zealand). Five participants were employed by five different commercial software development companies based in the United States and United Kingdom, and a further two were employed by NGOs that engaged in software development (one in Australia and one in the United Kingdom). Bridging these two was a group interview with six members of an application development team from an Australian NGO that had a primary role of delivering rehabilitative services to

corrections. The remaining four interviews involved two senior corrections managers with responsibility for digitalisation, an ICT specialist, and a researcher providing advice to a corrections agency on digitalisation strategy. While the corrections agency participants' experiences were from a single jurisdiction (although some had been involved in the development of more than one application in that jurisdiction), all five of the commercial developer participants and one of the NGO participants were active in multiple countries providing services and products to multiple corrections clients.

Analysis

All interview transcripts were analysed using Braun and Clarke's (2022) six phase thematic analysis approach: dataset familiarisation, systematic coding, initial theme generation, theme development and review, refinement and naming of inductive themes, and results write-up. All transcripts were coded independently by two members of the research team, and any differences in coding the deductive codebook component of our analysis were resolved through "negotiated agreement" (Campbell et al., 2013, p. 305), wherein members of the research team discussed any coding discrepancies, explained their reasoning for applying a code, and then attempted to reconcile these discrepancies.

Challenges in designing service delivery applications for correctional agencies: findings

Sourcing appropriate content

The most basic challenge facing correctional agencies is that of creating or adapting programme content to be delivered via digital technologies. Several informants noted that it was difficult to find off-the-shelf products that were suitable for delivering educational or rehabilitative programmes to correctional populations, in part because of the additional security controls that were required. Even sourcing programme content for standardised digital technologies like learning management systems or Chromebooks involved systematic modification to remove "objectionable content" or webpage links, or channels that allowed the user to communicate with people outside the correctional network. In countries where concerns about prisoners' access to external networks and resources are not as acute, there was some use of "courses and programs ... from outside" (Practitioner 1). As one practitioner put it, such courses and content represented, "not necessarily our own programs, but more like information and material from outside that we can use" (Practitioner 1).

A common strategy was to translate existing content or programme materials into forms that could be delivered digitally, although it was acknowledged that this was not necessarily ideal in terms of maintaining user engagement. The problem of finding or developing material that would be engaging for users was also noted by several interviewees. Digital delivery of content provided more information on users' engagement (see Ross et al., 2022), but this also highlighted the challenge of persuading users of the value and benefits of the material. One practitioner, for example, noted that agencies needed to be more focused on:

articulating to staff and to people in prison, why these are on offer and what are the benefits of using them? ... Rather than thinking that we're just going to put this ... system on there and people are

just going to explore it and find things that they're really interested to spend all their spare time undergoing self-improvement. (Practitioner 3)

Institutional culture

Correctional agencies' institutional culture was identified by the majority of interviewees as a significant barrier to designing service delivery applications. Institutional culture encompasses values, taken-for-granted knowledge, and artefacts (Hatch, 1993) that have been developed to address external adaptation and internal integration challenges. These values and assumptions are shaped by the experiences and values of organisation members, as well as the material artefacts employed by the organisation. Developers highlighted conflicts between digital technologies and elements of correctional culture. Specifically, they noted correctional officers' mistrust of incarcerated individuals as a major obstacle in designing service-delivery applications. Due to this mistrust, officers expressed concerns about granting incarcerated individuals access to certain digital technologies, citing safety, and security risks:

Some people in those settings were like: 'well we can't give them access to this because they will misuse it or whatever'. There are safe ways to use it, you can lock it down, you can use it through a worker account and so that it's all perfectly secure. But there's some people that think those young people have no right to an opinion or view. (Software designer 8)

The main impediment was the meeting of cultures, you know, the really tight lockdown culture and this very artistic culture and the main benefit was the meeting of these two cultures. (Software designer 11)

These risk and security concerns posed challenges for developers collaborating with correctional agencies and influenced their design decisions. A practitioner described the development environment in corrections as a "very fragile ecosystem of risk" (Practitioner 2), where digital apps had the potential to be disruptive. One developer mentioned that correctional stakeholders' apprehension about incarcerated individuals committing additional serious offenses resulted in his team making more "conservative" design choices that did not fully utilise the rehabilitative potential of digital technologies. Institutional culture also represented a barrier to digital service delivery when staff believed a particular technology would change – or challenge – their relationship with incarcerated people. One developer, for example, recounted a meeting with a prison senior manager in the wake of staff pushback concerning the introduction of their service-delivery technology into the facility:

The (senior manager) told me, "what do you expect, my staff is not trained to have conversations. I have security staff, they are trained to open doors and they take that as a moment to talk to the inmates"... You can say, "okay we can give them a little bit additional training" but you don't solve it with that, it's a very cultural thing, it's not easy to make that change. (Software designer 4)

Recognising this challenge, two designers we interviewed highlighted the significance of securing staff buy-in when implementing new technologies. One designer emphasised the

importance of taking operational staff on a journey by demonstrating how they can benefit from changing their practices through using new artefacts:

I think ... basically we've always felt that it's not just about building the program and parachuting it in somewhere but it is about looking at the role of implementation with the program, changing that work culture and sort of getting the workforce on board as well, ensuring that the needs of stakeholders are met. (Software designer 7)

I think the challenge for us is how we bring our colleagues, operational colleagues along that journey with us so they can understand that it's not just about, you know, a shiny interface as they would call it, or a more user-friendly approach to technology, it's really about transforming practice. (Software designer 9)

Another challenge highlighted by a developer was the concern among operational staff that new digital service delivery technologies would not only change their roles but also make them obsolete. Addressing this concern and gaining staff acceptance of new technologies may involve alleviating their fears about job displacement caused by technological advancements:

The key focus to it is about saying to staff, they're not being replaced, this is about bringing their skills into the 21st century and of course it is still like Marmite,³ you get some that love it and some that hate it, but equally, it is the way of the world now. (Software designer 7)

Finally, several interviews highlighted the challenge of designing for correctional agencies with different institutional priorities from the development firm's vision. One developer noted the difficulties arising from correctional agencies' organisational focus on operational issues rather than rehabilitation:

So the prison services are very much just focus..., focused on the everyday, just keeping the wheels on basically. It's ... been quite an eye opener to work with the prison service and actually find out how they operate. Operationally it's very much about just keeping the wheels from falling off ... It's not about rehabilitation. There's no focus [on rehabilitation]. What I've seen is, obviously, there are efforts at rehabilitation, but that's not the sort of priority ... the focus really in the prison service is on keeping everything running. (Software designer 5)

The perceived focus on "keeping the wheels on" reflects the manifestation of values within organisations (Hatch, 1993). In correctional environments, the perception of being overstretched and under-resourced in a high-risk setting shapes the organisational focus on operational needs rather than rehabilitation. These perceptions are rooted in the reality of understaffing, violence, and high turnover among correctional staff (Denhof et al., 2014; Lambert, 2001). However, some developers we spoke to held organisational values and a mission that aligned with the belief in the potential of digital technologies to assist rehabilitation and reintegration. This contrasted sharply with the operational risk-management priorities of many correctional agencies they encountered.

Anticipating public perceptions

The institutional barriers we have addressed thus far are intertwined with broader political and cultural challenges that influence carceral policies. The adoption of specific digital service-delivery technologies by corrections and community corrections is influenced by cultural attitudes towards punishment, justice, and incarceration. This becomes particularly relevant when considering the digital participation of incarcerated individuals. Jewkes and Johnston (2009, p. 137) argue that denying prisoners Internet access can be seen as a form of “technology being used as a strategy of social exclusion”. The stakeholders we interviewed were also mindful of public perceptions regarding providing digital technology access to incarcerated individuals, considering it a significant design challenge for corrections agencies. One software developer expressed this concern by stating:

A lot of things in probation are probably linked to public perception because we're in a ... probably in an arena where we're open to scrutiny and if things aren't deemed correct or done in the right way then it can massively have a big impact upon like service reputation. So ... that's where the hesitancy probably comes into play a lot in terms of it is like what are the risks associated with it. And I think the risks associated with stuff like this is that actually we haven't done this type of stuff before so it's never gonna probably go at a quick speed because people are wanting to ensure that actually it's not gonna be harmful to the service users or to the wider public. (Software designer 10)

Here, this developer framed the issue as revolving around public concerns about risk and safety to the community. This was one of the three themes Taugerbeck et al. (2019) identified in their discourse analysis on the issue of allowing prisoners to use digital technologies in German prisons, namely, that news media often conveyed a narrative of risk around prisoners' access to the Internet. Other developers we interviewed highlighted a second public perception challenge identified by Taugerbeck et al. (2019): the belief that digital participation in prison is an undeserved luxury. Some view facilities providing Internet access as “luxury hotels”, conflicting with a punitive view of imprisonment as hardship, penance, and isolation. While none of the developers mentioned “luxury hotels”, they acknowledged public attitudes towards punishment and the perception of prison as hardship as barriers to designing service delivery technologies for correctional agencies. One software developer referred to this issue as “the Daily Mail reader” and considered this imaginary figure when making design choices and shaping messaging for the service delivery applications developed for correctional agencies:

You've got to balance the needs or wants of the users with kind of the public acceptance of what we call the Daily Mail reader in the UK, Everyone is concerned about what the public think or say and we are as well because we'd rather the message be hey, they're using this tablet for education, for training, to get a job for when they leave so that they can be better citizens and not rob your house. (Software designer 2)

Another variant of this challenge was focused on the “taxpayer dollars” invested into providing incarcerated people with access to digital technologies. This variant was detailed by a practitioner when they recounted an early experience they had in which a design and procurement decision was heavily scrutinised by news media:

We had a lot of hurdles First of all [was obtaining] acceptance from ...management, from politicians, from citizens to do something for inmates. So I made a huge mistake in the beginning. I was coordinating [and] I didn't talk to enough stakeholders at the beginning ... I received a quote [and] I got the funding to put in cable in every prison. And then the news trucks ... arrived and it was like everywhere in the commercial newspapers, like "Justice are investing [hundreds of thousands of] Euros for Internet for inmates". (Practitioner 4)

Public perception is contingent on time, place, and significant events, such as the COVID-19 pandemic. Developers we interviewed noted how the pandemic altered correctional agencies' views on digital service delivery and provision of technology to incarcerated individuals. Specifically, they believed that the pandemic increased correctional agencies' demand for digital service delivery as a short-term measure and softened prison management's stance on digitising service delivery within prisons.

While concerns over punitive public attitudes towards imprisonment did pose a challenge for some developers we interviewed, none of them considered these views insurmountable. Instead, several developers, including the one who shared their experience of media scrutiny, highlighted the need to effectively communicate the benefits of providing incarcerated individuals with access to digital technologies. Nearly all the developers we spoke to expressed a similar sentiment, emphasising prisoner reintegration and presenting digital participation as a pathway to facilitate reintegration.

The "quagmire" of justice system bureaucracy

The criminal justice system, being a public service, operates within an administrative bureaucracy that can either enable or hinder organisational change (Mahoney & Thelen, 2010). It functions based on its internal logic, striving for a functional equilibrium that ensures the system's operational integrity. Consequently, various barriers exist, both externally and internally, for software application providers seeking to collaborate with corrections agencies within the justice system bureaucracy (Knight, 2015; Knight & Van De Steen, 2017; Link & Reece, 2021). These barriers may include restricted access, inadequate administrative systems, and outdated policies.

Gaining access to work within prisons or secure mental health units poses significant challenges. Software companies, despite their genuine intentions to collaborate with these organisations in developing relevant rehabilitative and training programmes using digital technology, encounter bureaucratic barriers. Software companies often face bureaucratic obstacles when attempting to access the closed environments of prison services or National Health Service (NHS) secure units in the United Kingdom,⁴ hindering access and impeding the utilisation of digital technology in correctional service delivery, as explained by one of the software developers we interviewed:

...the therapy aspect, well we're looking in the NHS for that, but we're not working in secure units or prison services. We haven't managed to. Because it's just difficult environments. Even in just, the secure units are actually NHS run ... To get into ... that field.... there seems to be a lot of barriers there. (Software designer 5)

As Kaun and Stiernstedt (2022, p. 69) argue, “prisons are rarely connected to technological development. It is rather a picture of absence of technologies that comes to mind when thinking of places of incarceration, especially digital media technologies seem evacuated from the prison space”. Consequently, commercial entities seeking access to carceral spaces encounter barriers similar to those encountered in conducting academic research within prisons, which is known to be particularly challenging (National Institute of Justice, 2012).

As one developer emphasised, the prison system can be a challenging “quagmire of bureaucracy”, hindering commercial and academic ventures. In one instance, a project was derailed due to lost email correspondence. The institutional culture of prisons and the justice system, characterised by administrative layers, can impede engagement in the carceral space (see Knight, 2015). However, efforts to transform the bureaucratic culture of the justice system are underway, aiming to enhance responsiveness and facilitate meaningful digital service delivery. A software developer we interviewed, working internally with the probation service, emphasised the difficulties in changing internal practices of the organisation:

There’s a very strong mental model built up over years and years and years that practitioners and stakeholders, senior stakeholders in the organisation have about, you know, just making things, making their existing tools better. And, you know, what we’re trying to say is well actually it’s more about maybe ... we can make the tools better but actually if you want to improve the outcomes and have a better organisation we need to transform the practices, the processes, the ways in which the work is actually undertaken. (Software designer 9)

A common theme from practitioners was the challenge of working effectively with technology providers. One noted that “we just didn’t have a lot of knowledge around app development” (Practitioner 1) while another identified the problem of effectively incorporating the views of users and external stakeholders in the development process. One of problems this developer identified was a propensity amongst senior stakeholders to prioritise digitising current programmes over analysing the surrounding processes. As he argued, this approach hinders systemic change and prevents the organisation from fully harnessing the nuanced benefits of digitalisation. Kaun and Stiernstedt (2022, p. 70) describe this phenomenon as technological solutionism (see Morozov, 2013), where digital technologies are seen as quick fixes for institutional challenges instead of catalysts for cultural transformation.

Programme funding in the context of prison digital transformation is also hindered by institutional bureaucracy. When commercial technology providers attempt to collaborate with prison services, they often encounter reluctance to commit to projects aimed at digitally transforming the justice system. As expressed by one software developer, there are concerns among certain individuals within the justice system regarding the commercial nature of software application companies entering the corrections space and seeking to profit from incarceration. These challenges make negotiation and collaboration with the corrections service problematic, particularly in securing funding for digital innovation, as highlighted by one developer, who stated:

They were very suspicious about us being a company. You know, are they getting money from this? And why? ... It’s a very difficult culture to navigate, in my limited experience of seeing this. And then to get the actual funding to do something beyond our initial pilot studies, was very, very difficult..... There’s lots of bureaucracy. (Software designer 5)

Supporting innovation

Several informants identified that there is “a will to innovate” on the part of the corrections but that this does not readily translate into financial support for commercial entities to drive digital innovation. Thus, funding emerges as an ongoing and significant challenge, hindering the development, implementation, and maintenance of digital technology in prisons and correctional facilities (see Knight, 2015). This theme is supported by another participant in the study, who further elaborates on this issue:

What I think is frustrating a little bit also for me is the polarisation between government and the private sector, working in the private sector is developing technology for a profit and therefore by default it's bad. ... It's something I see specifically in the probation sector where a lot of people ... want monitoring and control and things like that and ... the technology is by default seen and analysed as being something that's only there for making more money. So, this kind of polarisation, it's sometimes frustrating. (Software designer 4)

Corrections practitioners also acknowledged the difficulty in supporting innovation. One noted that their agency was open to innovation and disruption, but:

We're also very security focused. And that's probably why it would be good to outsource that R&D [Research and Development] stuff, because then you're kind of unencumbered. (Practitioner 3)

One software developer interviewed for this study, working on developing improved digital practices, offered a possible explanation for the polarised relationships between public and private actors involved in the digitisation of the justice system, stating:

I think for me the main thing is, and it's the example I gave with the app, is that especially here digital contents is slightly the unknown, so I'm not saying there's a fear but there's a hesitancy linked to wanting to explore that so when you do present to somebody like hey what about using an app, people are like well it's untested, we don't know about it, it's one of those things where it's ... so they're not wanting to commit to it. (Software developer 4)

This excerpt acknowledges the hesitancy of justice agencies to explore and engage in digital innovations, particularly with commercial providers. This hesitancy, influenced by the unknown nature of the technology, can impede systemic change in the justice system.

Discussion

The findings of this study highlight the significant role of institutional culture in shaping the design and implementation of digital service delivery technologies in correctional agencies. Correctional agencies' institutional culture, which encompasses values, taken-for-granted knowledge, and artefacts, plays a crucial role in shaping the attitudes and behaviours of correctional staff members. The introduction of new digital technologies in correctional environments has the potential to significantly alter staff roles and practices, leading to resistance and rejection if they contradict the existing culture of the organisation.

Such concerns about new technologies altering staff roles and relationships with incarcerated people can be explained using Stones' (2005) concept of position practices. Position practices encompass social positions, associated identities, and practices, along with the network of social relations and institutional infrastructures that support them (Greenhalgh & Stones, 2010). Technologies play a crucial role in shaping and constraining workers' actions within workplaces, contributing to the generation of position practices (Greenhalgh & Stones, 2010). When position practices are embedded in digital technologies, it becomes impossible to operate outside of them, as roles are inscribed into the software itself (Mutch, 2010).

As technologies shape position practices, they have a profound influence on staff experiences, routines, perceptions, and values, ultimately changing their roles. In one example, staff quickly recognised how the introduction of new digital service delivery technology transformed their interactions and associations with incarcerated individuals, significantly altering the nature of their work. These instances underscore the importance of examining not only the effectiveness of service-delivery technology in achieving its intended functions but also the mediating role of such technologies in shaping practices and roles (Wood et al., 2023). Technologies are more than just vessels for realised values; they generate new, unintended, and often unanticipated effects, needs, ends, and position practices that influence our experiences. When technologies mediate practices in a manner that contradicts the culture of a correctional organisation, staff are likely to reject or resist the artefact.

Recognising the transformative power of technologies on staff roles and practices, it is essential to acknowledge their symbolic meanings within correctional organisations. Hatch (1993) discusses this phenomenon as *prospective symbolisation*, where technologies become imbued with surplus meanings, eliciting emotional impact within organisations. In prison digitalisation, technologies can tap into broader socio-economic concerns about job automation (Ford, 2015), signifying potential loss for correctional staff. For some longstanding correctional officers, new technologies aiming to update their skills can symbolise an impending loss of integral practices. Digital service delivery technologies are not a neutral means to increase efficiency; they can transform practice, as noted by one interviewee. Introducing such technologies into correctional environments can generate hysteresis among officers (Bourdieu, 1977), where the environment changes faster than officers' taken-for-granted, beliefs generated through past interactions (Strand & Lizardo, 2017). This leads to a mismatch between officers' taken-for-granted beliefs and the new practices they must engage in, causing distress when their beliefs about correctional work, punishment, and imprisonment are challenged by the embedded practices and values of the new service delivery technologies they utilise.

Furthermore, collaborations between the public and private sectors in developing digital service delivery technologies face challenges rooted in government bureaucracy and risk aversion. Correctional agencies, driven by operational needs and risk management priorities, may be hesitant to embrace innovation and prioritise rehabilitation. This misalignment of priorities and values between correctional agencies and development firms can hinder the design and implementation of effective service delivery technologies. Further, collaborations between the public and private sectors face various issues embedded in government bureaucracy, which can sometimes breed suspicion towards commercial technology companies. This point is significant considering the lack of user-driven design in the literature. While some instances involve users in design processes (Morris et al., 2019; Morris & Knight, 2018), their involvement typically occurs later, during usability testing rather than in the initial

concept and development stages. Consequently, institutions may end up with systems that fail to meet the needs of end users.

Moreover, institutional bureaucracy contributes to hesitancy about digital innovation, as bureaucratic systems undergo gradual and incremental changes. Reform and innovation in corrections are notoriously challenging, and prisons often experience imposed change from external pressures, events, and incidents throughout their history (Allen, 2015, p. 99). These intertwined issues, encompassing suspicion towards commercial technology companies and the gradual nature of bureaucratic systems, present significant hurdles to effective collaboration between the public and private sectors, hindering the development of user-driven design and impeding the timely implementation of digital solutions in correctional settings.

Conclusion

We noted at the beginning of this article that corrections have been a late-comer to digital innovation and transformation. The digital transformation of the education, health, and human sectors is much more advanced and these sectors support active streams of theory, research, and policy concerned with the design, implementation, and impacts of information technology. In contrast, the digitalisation of corrections has proceeded with only very limited consideration of what this process represents in terms of the technology of social control. The research presented here provides one perspective on this problem. A key problem with any research on digital transformation is keeping up with the pace of development of the technology. It is already clear that the next wave of digital development in corrections will involve artificial intelligence and the use of virtual and augmented reality technologies. So the problem of understanding how these technologies are applied remains a work in progress.

The key finding of this research is that the techno-social landscape of corrections is strongly shaped by existing correctional values and culture. The obvious risk here is that the digitalisation of corrections will result in more pervasive and powerful forms of social control. However, it is also evident that digitalisation can act as a catalyst for the transformation of the techno-social landscape of corrections. Brown, Fishenden, and Thompson (2014, p. 7) argue that to be truly effective, digitising government must also involve “reimagining the way in which governments design and deliver services”. Rather than viewing technology as a threat to security and prison staff jobs, the prison service would benefit from embracing innovation as a means of contributing to the cultural transformation of the operational mindset of the prison service (Taugerbeck et al., 2019). This shift might begin by reimagining the traditional view of prison as a place of punishment to a site of rehabilitation that leverages the benefits of digitalisation for the purpose of the resocialisation of incarcerated people.

Technology and digitalisation, while not a panacea, provide a way forward to alleviate some of the challenges explored in this article. To truly leverage the benefits of new technologies in corrections, it is essential to move beyond a simplistic equating of technology with innovation. While advancements in technology can certainly drive innovation, the mere presence of technology does not guarantee positive outcomes. Instead, it is crucial to consider a comprehensive set of values, including ethical considerations, societal impact, and the potential for long-term effectiveness.

However, achieving positive outcomes requires more than just recognising the importance of values; it also necessitates an understanding of the contextual factors that can shape the

success or failure of technology integration. Introducing new technologies without a thorough understanding of the physical, bureaucratic, cultural, and social context in which they are implemented can lead to unforeseen challenges and hinder true innovation. It is important to recognise that each correctional setting is unique, with its own set of challenges and dynamics. By thoroughly assessing these contextual factors, potential issues can be identified and addressed proactively, allowing for a smoother integration of technologies and maximising their potential benefits.

Recognising the need for a shift in focus, the introduction of new technologies can pave the way for a more rehabilitative approach in corrections. The introduction of new technologies provides an opportunity to change the focus of how prisons operate. By embracing digital service delivery technologies that support rehabilitation efforts, corrections systems can better address the root causes of criminal behaviour, reduce recidivism rates, and promote successful reintegration into society. This shift necessitates a re-evaluation of existing practices and a willingness to invest in innovative approaches that prioritise rehabilitation, ultimately fostering safer communities.


Declaration of conflicting interests


The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Criminology Research Advisory Council, Australian Institute of Criminology, Correctional Services Administrators Council (grant number 08 20-21, n/a).

ORCID iDs

Stuart Ross  <https://orcid.org/0000-0001-6242-7622>

Mark A Wood  <https://orcid.org/0000-0001-6346-6965>

Kajsa Lundberg  <https://orcid.org/0000-0003-1768-6208>

Notes

1. In this article, we distinguish between digitalisation (the use of digital technologies to deliver business or services) and digitisation (the conversion of existing data, documents or records into a digital format). In general, the processes we are concerned with are forms of digitalisation.
2. Further details of this project are available from <https://www.aic.gov.au/crg/reports/crg-0820-21>.
3. Marmite is a food spread made from yeast extract, known for its distinctive salty, savory flavour. Its strong and polarising taste led its manufacturers to adopt the slogan “love it or hate it”, in the 1990s.
4. Since 2013, the delivery of healthcare to incarcerated people in the United Kingdom has primarily been the responsibility of the NHS (Hutchings & Davies, 2021).

References

- Allen, R (2015) Continuity and change in prisons. In M. Wasik, & S. Santatzoglou, (Eds) The management of change in criminal justice. Palgrave Macmillan. https://doi.org/10.1057/9781137462497_6
- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge University Press.
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. Sage Publications.

- Brown, Alan, Fishenden, Jerry, & Thompson, Mark (2014) *Digitizing Government*. Palgrave Macmillan. <https://doi.org/10.1057/9781137443649>
- Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding in-depth semi-structured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, 42(3), 294–320. <https://doi.org/10.1177/0049124113500475>
- Chaple, M., Sacks, S., McKendrick, K., Marsch, L.A., Belenko, S., Leukefeld, C., Prendergast, M., & French, M. (2016). A comparative study of the therapeutic education system for incarcerated substance-abusing offenders. *The Prison Journal*, 96(3), 485–508. <http://doi.org/10.1177/0032885516636858>
- Clarke, R. (1988). Information technology and dataveillance. *Communications of the ACM*, 31(5), 498–512. <https://doi.org/10.1145/42411.42413>
- Davies, G., Ward, J., Elison, S., Weston, S. K., Dugdale, S., & Weekes, J. (2017). Implementation and evaluation of the breaking free online and pillars of recovery treatment programs for substance-involved offenders. *Advancing Corrections*, 3, 95–113.
- Denhof, M. D., Spinaris, C. G., & Morton, G. R. (2014). Occupational stressors in corrections organizations: Types, effects and solutions. *US Department of Justice, National Institute of Corrections*, 54, 71–82.
- Elison-Davies, S., Märtens, K., Yau, C., Davies, G., & Ward, J. (2021). Associations between baseline opioid use disorder severity, mental health and biopsychosocial functioning, with clinical responses to computer-assisted therapy treatment. *The American Journal of Drug and Alcohol Abuse*, 47(3), 360–372. <http://doi.org/10.1080/00952990.2020.1861618>
- Ford, M. (2015). *Rise of the robots*. Basic Books.
- Graham, H., & White, R. (2016). The ethics of innovation in criminal justice. In J. Jacobs, & J. Jackson (Eds.), *The Routledge handbook of criminal justice ethics* (pp. 267–281). Routledge.
- Greenhalgh, T., & Stones, R. (2010). Theorising big IT programmes in healthcare: Strong structuration theory meets actor-network theory. *Social Science & Medicine*, 70(9), 1285–1294. <http://doi.org/10.1016/j.socscimed.2009.12.034>
- Hatch, M. J. (1993). The dynamics of organizational culture. *The Academy of Management Review*, 18(4), 657–693. <https://doi.org/10.2307/258594>
- Homburg, V. (2018). ICT, e-government and e-governance: Bits & bytes for public administration. In E. Ongaro, & S. V. Thiel (Eds.), *The Palgrave handbook of public administration and management in Europe* (pp. 347–361). Palgrave.
- Hutchings, R., & Davies, M. (2021). *How prison health care in England works*. Nuffield Trust. <https://www.nuffieldtrust.org.uk/resource/prison-health-care-in-england>
- Janowski, T. (2015). Digital government evolution: From transformation to contextualization. *Government Information Quarterly*, 32(3), 221–236. <https://doi.org/10.1016/j.giq.2015.07.001>
- Jewkes, Y., & Johnston, H. (2009). "Cavemen in an era of speed-of-light technology": Historical and contemporary perspectives on communication within prisons. *The Howard Journal of Criminal Justice*, 48(2), 132–143. <https://doi.org/10.1111/j.1468-2311.2009.00559.x>
- Kaun, A., & Stierstedt, F. (2022). Prison tech: Imagining the prison as lagging behind and as a test bed for technology advancement. *Communication, Culture and Critique*, 15(1), 69–83. <https://doi.org/10.1093/ccc/tcab032>
- Kempeneer, S., & Heylen, F. (2023). Virtual state, where are you? A literature review, framework and agenda for failed digital transformation. *Big Data & Society*, 10(1), 205395172311605. <http://doi.org/10.1177/20539517231160528>
- Knight, V. (2015). Some observations on the digital landscape of prisons today. *The Prison Service Journal*, 220, 3–9.
- Knight, V., & Van De Steen, S. (2017). Digitizing the prison: The light and dark future. *The Prison Service Journal*, 231, 22–30.
- Lambert, E. G. (2001). To stay or quit: A review of the literature on correctional staff turnover. *American Journal of Criminal Justice*, 26(1), 61–76. <https://doi.org/10.1007/BF02886857>

- Lerch, J., Viglione, J., Eley, E., James-Andrews, S., & Taxman, F. S. (2011). Organizational readiness in corrections. *Federal Probation*, 75(1), 5–10.
- Lerch, J., Walters, S.T., Tang, L., & Taxman, F.S. (2017). Effectiveness of a computerized motivational intervention on treatment initiation and substance use: Results from a randomized trial. *Journal of Substance Abuse Treatment*, 80, 59–66. <http://doi.org/10.1016/j.jsat.2017.07.002>
- Link, T. C., & Reece, B. (2021). Barriers to the adoption of technological innovations in corrections: A review and case study. *International Journal of Offender Therapy and Comparative Criminology*, 65(2–3), 262–281. <https://doi.org/10.1177/0306624X20952396>
- Mahoney, J., & Thelen, K. (2010). *Explaining institutional change: Ambiguity, agency and power*. Cambridge University Press.
- McGreevy, G. (2017). "Changing lives": Using technology to promote desistance. *Probation Journal*, 64(3), 276–281. <https://doi.org/10.1177/0264550517719105>
- McKay, C. (2022). The carceral automaton: Digital prisons and technologies of detention. *International Journal for Crime, Justice and Social Democracy*, 11(1). <https://doi.org/100–119.10.5204/ijcsd.2137>
- McNeill, F. (2018). *Pervasive punishment: Making sense of mass supervision*. Emerald Publishing. <https://doi.org/10.1108/9781787564657>
- Meijer, A., & Bekkers, V. (2015). A metatheory of e-government: Creating some order in a fragmented research field. *Government Information Quarterly*, 32(3), 237–245. <https://doi.org/10.1016/j.giq.2015.04.006>
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.
- Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. Public Affairs.
- Morris, J., & Bans, M.K. (2018). Developing digitally enabled interventions for prison and probation settings: a review. *Journal of Forensic Practice*, 20(2), 134–140. <http://doi.org/10.1108/JFP-08-2017-0030>
- Morris, J., Gibbs, C.A., Jonah, O.T., Bloomfield, S., Weatherstone, P.H., & Ireland, J.L. (2019). Developing content to promote desistance in men who have committed intimate partner violence in same-sex relationships. *European Journal of Probation*, 11(2), 96–113. <http://doi.org/10.1177/2066220319871454>
- Morris, J., & Graham, H. (2019). Using technology and digitally enabled approaches to support desistance. In P. Ugwudike, H. Graham, F. McNeill, P. Raynor, F. S. Taxman, & C. Trotter (Eds.), *The Routledge companion to rehabilitative work in criminal justice*. (pp. 179–192). Taylor & Francis.
- Morris, J., & Knight, V. (2018). Co-producing digitally-enabled courses that promote desistance in prison and probation settings. *Journal of Criminological Research, Policy and Practice*, 4(4), 269–279. <https://doi.org/10.1108/JCRPP-07-2018-0023>
- Mutch, A. (2010). Technology, organization, and structure—A morphogenetic approach. *Organization Science*, 21(2), 507–520. <https://doi.org/10.1287/orsc.1090.0441>
- National Institute of Justice. (2012, March 25). Challenges of conducting research in prisons. <https://nij.ojp.gov/topics/articles/challenges-conducting-research-prisons>
- Nellis, M. (2016). Electronic monitoring and penal reform: Constructive resistance in the age of “Coercive Connectedness”. *British Journal of Community Justice*, 14(1), 113–132.
- Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology*, 11(4), 327–344. <https://doi.org/10.1080/13645570701401305>
- Puolakka, P. (2021). Smart prison: A historical digital leap in Finnish prisons. *Justice Trends*, 7. <https://justice-trends.press/smart-prison-a-historical-digital-leap-in-finnish-prisons/>
- Reisdorf, B. C., & DeCook, J. (2021). The digital technologies of rehabilitation and reentry. In B. Arrigo, & B. G. Sellers (Eds.), *The pre-crime society: Crime, culture and control in the ultramodern age* (pp. 365–385). Bristol University Press.
- Reisdorf, B. C., & Rikard, R. V (2018). Digital rehabilitation: A model of reentry into the digital age. *American Behavioral Scientist*, 62(9), 1273–1290. <http://doi.org/10.1177/0002764218773817>

- Robberechts, J., & Beyens, K. (2020). Prisoncloud: The beating heart of the digital prison cell. In J. Turner, & V. Knight (Eds.), *The prison cell: Embodied and everyday spaces of incarceration* (pp. 283–303). Palgrave Macmillan.
- Ross, S., Wood, M. A., Baird, R., & Lundberg, K. (2023a). *Corrections agencies' use of digital service delivery applications during COVID-19*. Trends & issues in crime and criminal justice no. 677. Australian Institute of Criminology. <https://doi.org/10.52922/ti77093>
- Ross, S., Wood, M. A., Baird, R., & Lundberg, K. (2023b). *Digital service delivery applications in corrections: Uptake, impact, and challenges in the wake of COVID-19*. Report to the Criminology Research Advisory Council Grant: CRG 08/20–21. Australian Institute of Criminology.
- Ross, S., Wood, M. A., Johns, D., Murphy, J., Baird, R., & Alford, B. (2022). Understanding engagement with forensic smartphone apps: the service design engagement model. *International Journal of Offender Therapy and Comparative Criminology*. <https://doi.org/10.1177/0306624X221106323>
- Smeijers, D., Bulten, E. H., Verkes, R. J., & Kooze, S. L. (2021). Testing the effects of a virtual reality game for aggressive impulse management: A preliminary randomized controlled trial among forensic psychiatric outpatients. *Brain Sciences*, *11*(11), 1484. <https://doi.org/10.3390/brainsci11111484>
- Stones, R. (2005). *Structuration theory*. Palgrave Macmillan.
- Strand, M., & Lizardo, O. (2017). The hysteresis effect: Theorizing mismatch in action. *Journal for the Theory of Social Behaviour*, *47*(2), 164–194. <https://doi.org/10.1111/jtsb.12117>
- Sundberg, L. (2019). Electronic government: Towards e-democracy or democracy at risk? *Safety Science*, *118*, 22–32. <https://doi.org/10.1016/j.ssci.2019.04.030>
- Taugerbeck, S., Ahmadi, M., Schorch, M., Unbehau, D., Aal, K., & Wulf, V. (2019). Digital participation in prison-A public discourse analysis of the use of ICT by inmates. *Proceedings of the ACM on Human-Computer Interaction*, *3*(GROUP), 1–26. <https://doi.org/10.1145/3361114>
- United Nations Department of Economic and Social Affairs (2022). *e-Government survey 2022: The future of digital government*. <https://desapublications.un.org/sites/default/files/publications/2022-11/Report%20without%20annexes.pdf>
- Van De Steene, S., & Knight, V. (2017). Digital transformation for prisons. *Probation Journal*, *64*(3), 256–268. <http://doi.org/10.1177/0264550517723722>
- Weekes, J. R., Elison, S., De Moor, C., & de Loë, K. (2017). Technology-enhanced innovations for addressing substance-misusing offenders' treatment needs. In J. Ireland, C. Ireland, M. Fisher, & N. Gredecki, (Eds), *The Routledge international handbook of forensic psychology in secure settings* (pp. 164–177). Routledge.
- Wood, M. A., Mitchell, M., Pervan, F., Anderson, B., O'Neill, T., Wood, J., & Arpke-Wales, W. (2023). Inviting, affording and translating harm: Understanding the role of technological mediation in technology-facilitated violence. *The British Journal of Criminology*, *63*(6), 1384–1404. <https://doi.org/10.1093/bjc/azac095>