Doing time, the smart way? Temporalities of the smart prison

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Abstract
The article engages with the notion of the smart prison to develop an understanding of emerging temporalities of digital technologies. The prison context serves here as a magnifying glass that makes certain contradictions and paradoxes of the digital imperative visible. Starting with a brief discussion of smart technology discourses, the article explores the temporalities of real-timeness, prediction and pre-emption that are entangled with digital technologies. Analysing the Spartan RFID tracking tool, the use of algorithms in prison administration and a mobile phone application used in Swedish probation, the article identifies a desynchronization between the temporalities of the incarcerated individuals' lived experience and the (imagined) temporalities of the smart prison. The findings point to developments that are relevant for the smart, digital society beyond the prison walls.

Keywords
Digital media technologies, prediction, pre-emption, real-time, smart city, smart prison, temporality

Introduction
The notion of smartness has been dominating innovation and technology discourses for a while now (Halpern, 2015; Halpern et al., 2013; Kitchin, 2014b). Our homes, cities, workplaces, health and lives in general are supposed to get easier and more efficient with the help of applications, sensors, algorithms and artificial intelligence (AI). Similar
discussions have also reached the juridical and legal context (Christin, 2017). Algorithms are supposed to support lawyers and judges in their work to make fairer decisions more efficiently. It is, however, not only the prosecution process, but also the serving of the sentence as such that has become object of smartification. There are an increasing number of smart prison solutions and initiatives offered across jurisdictions by different corporations such as Johnson Controls, GTL and Avigilon. For example, Malaysia is increasingly working with AI to analyse closed-circuit television (CCTV) footage to pre-empt fights or flight attempts. In a number of US prisons, AI-enabled automated analysis of phone calls is supposed to pre-empt the organization of crimes from the prison, while at the same time, there are attempts to systematically record and voice-fingerprint incarcerated individuals. Australia is currently testing different AI solutions combining CCTV analysis with smart sensors in the probation and home detention context (all examples from Goedbloed, 2019). One of the countries at the very forefront of prison smartification is Hong Kong that among other things hands FitBits to incarcerated individuals to track their movements and pulse to pre-empt overdoses or fights (Sueddeutsche Zeitung, 2019). At the same time, electronic surveillance as an alternative to expensive prison infrastructures are discussed in different jurisdictions and on an international scale. However, the use of smart technologies, that is, digital media in the prison context is characterized by a paradox. While smart technologies are increasingly used for surveillance and control as well as administrative purposes, prisoners themselves remain largely excluded from access to digital media. This article investigates, hence, the paradox and inherent contradictions of the smart prison that have crucial implications for people who are incarcerated.

Our starting point is that prisons are not confined places, removed from the rest of society. They do not constitute fundamentally different social realities. For society, heterotopian places like prisons are essential (Foucault, 1984; Goffman, 1968) and they offer insights into general social processes as micro-societies that highlight and make visible general contradictions, for example, related to digital technologies. At the same time, prisons constitute social realities that are perceived as being fundamentally situated outside of society by incarcerated individuals themselves and that needs an active adjustment through ‘living into the small world’ of the prison (Chatman, 1999: 209). Prisons enhance forms of social exclusion and isolate people who are incarcerated as well as their families and friends (Farley and Hopkins, 2017). In that context, we discuss how the penal regime is re-imagined with and through media technologies that culminates in future visions of the digital, smart prison.

While the smart city discourse has attracted a number of research initiatives, smart technologies in the prison context are still rarely discussed. Rather than adding to attempts to define smartness in relation to digital technologies, we identify temporalities that emerge in the context of smart prison technologies and that potentially stand in a stark contrast with the lived experience of incarcerated individuals. Not only is temporality – often disguised as efficiency – part of the basic definition of smart technologies, it is also one prime site of the carceral experience that enhances temporal experiences such as the loss of temporal autonomy for incarcerated individuals. We argue, consequently that the prison context allows us to disentangle different temporal layers that smart technologies enable, but also constrain.
In order to illustrate how the notion of the smart prison has emerged, we follow the digitalization discourse within the Swedish penal system and more specifically, current initiatives such as strategic documents outlining the renewal of the organization with the help of smart technology. Furthermore, we engage with specific smart technologies that are currently being introduced in different penal systems beyond Sweden. Analytically, we rely on critical textual analysis considering both textual and visual elements to develop thematic clusters. We start with a brief discussion of smart technology discourses mainly evolving in the context of urban development and ask for the implications for prisons. We then move to analyse specific smart prison applications and technologies and disentangle the temporal layers they add to life in prison. We end with a discussion of desynchronized temporalities in the smart prison that point to developments beyond the prison walls.

Smart cities, smart prisons?

While the notion of the smart prison is an emerging discourse, the idea of smartness in the city and urban planning process has enjoyed broad popularity for at least one decade and serves here as a way to develop key examples that set the agenda for smart technology discussions more generally.

Håvard Haarstad (2016) argues that the smart city discourse is heavily promoted within the European Union and a majority of European cities has implemented or suggested smart city initiatives. Witness to the high priority of smart city initiatives is the programme Smart Cities and Communities (SCC) that supports cities and regions in their smartification attempts throughout the European Union. Smart cities initiatives share a focus on embedding Information and communication technologies (ICTs) into the urban infrastructures, promoting creative industries perspective, programmes aimed at social learning, education and social capital, as well as environmental sustainability. There are, furthermore, several benchmarking initiatives that rank smart cities every year (Vanolo, 2013). The smartification discourse has increasingly moved into the home as well. With, for example, companies like Nest offering a set of applications and devices for smart home surveillance or test bed projects testing smart grid home applications (Hägglund, 2017).

There are a number of attempts to define the most fundamental characteristics of a moving target – the smart city, which has been notoriously difficult to pin down including discussions of smart economy, smart mobility, smart governance, smart environment, smart living and smart people. Smart in the city context is often used to describe the intelligent arrangement of urban city space in relation to technology and the ability to adapt and implement innovations building on information communication and technology infrastructures (Vanolo, 2013). Hollands (2008) argues that smartness in the city context may refer to everything ranging from hardware like cables and wires, types of information and networks within the city to human capital approaches that emphasize skills, creativity and education. According to him, the dominant understanding refers to the ‘utilization of networked infrastructures to improve economic and political efficiency and enable social, cultural and urban development’ (Hollands, 2008: 307). Hence, different media and information technologies are at the core of smart cities. A second element
of the smart city discourse emphasizes the business-led character of urban development that is driven by private initiatives as well as public–private partnerships. The third element focuses on enhancing possibilities for the creative industries and, in that sense, promotes aspects of soft-infrastructure of the smart city rather than the technological hardware. Often definitions and approaches to smart cities incorporate elements of social and political participation of citizens as well as increasingly questions of social and environmental sustainability. Rob Kitchin (2014b) adds the important aspect of big data generation as part of smart city initiatives as they are

[. . .] being instrumented with digital devices and infrastructures that produce ‘big data’. Such data, smart city advocates argue enables real-time analysis of city life, new modes of urban governance, and provides the raw material for envisioning and enacting more efficient, sustainable, competitive, productive, open and transparent cities.

He (Kitchin, 2014b) further distinguishes between smart city conceptions that focus on (a) pervasive and ubiquitous computing to monitor and structure the city and (b) ICT-enabled smart planning processes of the urban development that also include an emphasis on creation and knowledge industries for growth. Both approaches build on the idea of implementing and integrating digital devices and infrastructures into the cityscape in order to produce large-scale data in real time. With the help of the harvested data, life in the city is supposed to be analysed in real time, allowing new forms of governance that are more efficient, sustainable, competitive, productive, open and transparent (Kitchin, 2014b). Smart city initiatives share a focus on embedding ICTs into the urban infrastructures, promoting creative industries perspective, programmes aimed at social learning, education and social capital as well as environmental sustainability. These urban developments are often business-led and enhance a neoliberal approach (Kitchin, 2014a). Smart cities are hence data cities, while at the same time, city development is based on and intertwined with data-rich knowledge production. Combining these different elements leads to certain tensions within smart cities. There are tensions between global markets and ordinary citizens living in the smart cities; between the creative, elite class and other classes that remain part of smart cities as well as between top-down smartification processes and bottom-up, grassroots initiatives towards urban development (Kitchin, 2014a). Similarly, smart technologies in the prison context have the potential to enhance certain existing tensions; tensions between control and rehabilitation; punishment and empowerment as well as access and disconnection.

(Digital) Media technologies in the prison context

What does it mean to import the idea of smartness into the prison context that has notoriously been characterized by a lack and scarcity of new media technologies (Jewkes, 2002; Knight, 2016)? The smart prison is an emerging notion that is not yet widely discussed, but that has recently gained some traction (Knight, 2018; Knight and Van De Steen, 2017). The Swedish consultancy company for smart buildings, Memoori, suggested in 2017 that ‘prisons should be smart buildings, too’. The article that mainly relies on examples of smart prison technologies developed by Johnson Controls discusses the
advantages of smart technologies in the prison context, particularly for increasing and improving security and efficiency (Memoori, 2017), but also how smart technologies could be implemented for rehabilitation purposes to prepare incarcerated individuals for a future outside of the prison. To situate this emerging discourse of smart technologies in the prison context, it is important to highlight historical changes and continuities when it comes to the use and access of media technologies in prisons. The discussion of media technologies in prisons here is not all-encompassing, but highlights important historical developments since the inception of the modern prison with a particular focus on the European context.

From the outset of modern prisons in the 19th century, the question of media access and communication was one of the most central and important issues. As the punitive regime transformed and increasingly came to focus on reforming and rehabilitating inmates, prisons to a large extent became highly regulated communication spaces. What prisoners should read and listen to, whom they should communicate with – and how – was strictly regulated. The ‘Philadelphia-model’ prison that became the most widespread in Europe prescribed solitude and total silence on behalf for inmates and staff (Matthews, 2009: 18). In jurisdictions applying the Philadelphia-model, the only allowed reading was generally religious texts, in Sweden, for example, the New Testament, a hymn book and the book *I ensamma stunder – en tänke- och andaktsbok* [In moments of loneliness – a book of ideas and devotion] authored by the Swedish vicar Arvid Salvén (Rudstedt, 1994: 29).

A lot has changed since the rise of the modern prison in the 19th century, but what remains is the notion that the regulation of communication and media access is an important part of punishment (and of reform and rehabilitation) itself. With every new media technology, there has also been a discussion on how media technologies can be used in order to achieve and maintain control of the inmates, a crucial question in all punitive practice. For example, television has proved to be an efficient tool for control, and the introduction of in-cell television from the 1970s and 1980s in Sweden has been shown to contribute to the regulation of behaviour. Not only does it have a ‘sedating’ function (keeping inmates calm) but access – and the threat of removing access – can also be used in order to achieve social control (Knight, 2016).

The media use of prisoners is an area that has received some nevertheless comparatively little interest in media studies research. Two larger studies of prisoners as media audiences have been conducted; one in the 1980s in the United States (Lindlof, 1987) and one in the 1990s in Belgium (Vandebosch, 2000, 2001). These studies use the confined and isolated environment of the prison and the unique position of the inmate in order to better understand what affects peoples’ media consumption and media choices more generally, also outside of prison walls. Heidi Vandebosch (2000), for example, concludes that a general point from her survey in Belgian prisons is the understanding of how background characteristics, living conditions and individual psychological characteristics taken together can explain media use (p. 541). The studies do, however, also provide some basic knowledge of media use of prisoners. Lindlof’s (1987) study, for example, reveals how media consumption patterns in American prisons is highly racially determined, but also how inmates use (mainly) television in order to keep connected to the outside world, not only in regard to information of what is going on ‘out there’, but
also to connect to memories and emotions from the outside. Vandebosch (2001) points to how media use is a coping tool in prison, that helps to soften the ‘chronic pains of imprisonment’, and that media use is a way to fight boredom and loneliness. It is also discussed in both studies how different segments of the prison population gravitate towards different kinds of media output. Sentence length, for example, affects media consumption as does the extent to which prisoners identify themselves as ‘real criminals’ or not. An interesting finding in Vandebosch’s (2000) study is that inmates use personal advertisements that they would publish in magazines in order to communicate with the outside world. In general, the strict regime of communication within prison and among prisoners and outsiders, has led to a range of creative media practices in order to disseminate information and to communicate ‘against the rules’ among prisoners. One major issue is the question of communicative contraband, the smuggling of cell phones to prisoners so that they can use them to communicate with the outside world (Scism and Bryan, 2008), but also the way in which ordinary telephone services within prisons have been used in order to communicate in prohibited ways.

Yvonne Jewkes and Bianca Reisdorf (2016) argue that ‘media technologies fundamentally challenge the historical meaning and functions of the prison as an archetypal “closed,” sequestered and restricted space that assaults self and personhood’ as they open up the space of the ‘total institution’ to the external world, both in terms of providing alternative realities and allowing for connections with people beyond the prison walls (p. 536). At the same time, smart digital technologies including touchscreen kiosks on which prisoners can arrange family or legal visits, order certain products or chose their canteen food contribute to a shift in governance of prison populations. Jewkes and Reisdorf (2016) argue that they are part of a refashioning of power and control moving from a coercive model to a model that is focused on self-interest and self-regulation or what has been described as responsibilization. However, until today there remains a strong digital divide between prisons and the outside world as well as between different prisons that handle access to digital media technologies quite differently.

In addition, public discourse often emphasizes the importance of a ‘total institution’ that controls and secludes the criminal subject from society as the preferred mode of penalty, while access to (new) media technologies is widely regarded as privilege (Jewkes and Johnston, 2009). In that sense, digitalization and smartification of the prison potentially runs counter to common ideas of incarceration that is based on isolation, solitude, retribution as well as hardship and to a certain degree suffering. The discussion of access to digital media has become an ideological battleground. At the same time, prison right advocates argue that the absence of computers and digital technologies in the everyday lives of prisoners impedes rehabilitation and comes close to a form of censorship that reduces them to second-class citizens and should be considered as being similar to other forms of deprivation such as low income, unemployment and low educational levels, for example (Jewkes and Reisdorf, 2016). Peter Scharff Smith (2012), for example, argues that Internet access should be considered as a human right and is part of the normalization of prison life that is a dominant approach in Norway, Sweden, Finland as well as Denmark and Iceland. The normalization approach emphasizes that life in prison should resemble as much as possible life outside of the prison walls, including stable structures of everyday life such as work and leisure activities. The approach is furthermore
expressed in collegial prisoner–guard relations and a commitment to providing reliable social services including education and job training to prisoners and staff (Reiter et al., 2018). To some extent, the normalization thesis is co-existing in the narratives of surveillance and control, while new smart products and solutions are often marketed as both giving new opportunities for rehabilitation – for example, through extended possibilities for prisoners to communicate with friends and loved ones – and at the same time, deepening the possibilities for control. Automated monitoring of calls or inmate messaging systems afford possibilities for offenders to keep in touch with people outside the prison through text messaging, while simultaneously intensify the possibilities of surveillance.

The prison environment is, hence, characterized by an ambivalent relationship to digital technologies, which could be described as a paradox of a data-intensive environment observing and documenting prisoners constantly and consequently producing large amounts of data combined with often low digital technology access for prisoners themselves. Digital technologies are increasingly employed for surveillance purposes, but are more controversially discussed in the context of rehabilitation and access by prisoners (Jewkes and Reisdorf, 2016). In that sense, the prison reproduces and amplifies the divide between smartification on the one hand and exclusion from smart technologies on the other that have been observed in the smart city context (Kitchin, 2014b).

**Approaching the smart prison**

The article draws on a multi-method design that combines textual analysis of policy documents, application descriptions, user testimonials with participant observation and interviews. The aim of this multi-method design is to develop a broad picture of the smart technologies in use and discourses surrounding them in order to extract the temporal layers that emerge in the context of smartification of the prison.

In order to gather the textual material, we have systematically scanned policy documents of the Swedish Prison and Probation Service related to digitalization that have been issued in the last 5 years (in total 23 documents that vary in length between 3 and 100 pages and include among others reports, directives and project reports). We have here particularly focused on the strategic document that develops the digital agenda for the prison and probation services for the upcoming years. Through the analysis of OMKRIM, an in-house magazine of the Swedish Prison and Probation Services catering to its employees, we traced specific technologies that have been developed for the Swedish prison system including an app used to support probation for which we have conducted a walk-through (Light et al., 2018). We only analysed the parts of the app that are publicly available as well as press releases that present the app to the public and describe its functionality. The walk-through was documented through screenshots and notes on the different functions. To broaden the empirical material, we also included a case study of an American product that relies on radio frequency identification (RFID) tracking that is widely used in the US context to illustrate changing temporalities with digital media technologies in the prison context for surveillance purposes. This case study includes the analysis of product descriptions and user testimonies that are publicly available.
Besides the textual analysis, we rely on informal and formal interviews with around 10 employees of the Swedish Prison and Probation Service, three of which have been audio-recorded and transcribed verbatim, which allow us to contextualize the documents and technologies. As part of participant observations at the Swedish Prison and Probation Services over the course of 1 year, we have spoken with personnel from different units of the organization including the Technology Department, the Research and Evaluation Unit as well as the Production Unit. The observations were conducted in the headquarters in Norrköping as well as a local branch in Stockholm. We have furthermore conducted sight visits in two larger prison facilities in Sweden. The participant observations were conducted as part of an outreach project funded by the university of the authors and resulted in field notes amounting to around 30 single-spaced pages. The field notes are structured around substantial descriptions of the observed situations, logistical aspects including personnel involved, time, date and place of the observation as well as reflexive notes including reflections about moods, tensions and the feel of the situation.

The material was analysed following a theme-based analysis, highlighting major categories in relation to digital technologies. The categories developed from the material are illustrated with the help of quotes and images throughout the analysis. The material does not include interviews with incarcerated individuals since access and ethics clearance through the Swedish Prison and Probation Services is still pending.

**Smart prison technologies**

In 2018, the Swedish Prison and Probation Service launched the initiative Krim:Tech mainly in order to recruit technology developers to the public agency, but also as a hub to renew, digitize and smartify the work with incarcerated individuals. The Swedish Prison and Probation authority describes the hub in following terms:

Krim:Tech is the new digitalization initiative by the Swedish Prison and Probation Service. With the help of the latest technology and research, the initiative will support the development of new and improved digital solutions within the authority.

Krim:Tech is an inventor’s workshop and testbed for digital technology. Does an ankle monitor have to be actually be an ankle monitor or could it be something else instead? How can we use IT to keep our security class 1 facilities calm? How can we prevent that children and families who are visiting their father or mother in the prison from getting afraid? Can we do the security scan with a toy instead of metal detectors and full body scanners? (From a job opening, March 2018, https://www.kriminalvarden.se/globalassets/kontakt_press/pressmeddelanden/krimtech-klar.pdf)

Part of the recruitment campaign is also an image film that features the slogan of the technology hub Krim:Tech within the organization ‘Renew with smart technology’ (see Figure 1).

Both the description of Krim:Tech in the job opening and the image film reinforce the idea of renewal of the whole organization, the incarcerated individuals and in extension of society with the help of smart digital technology. This idea of renewal and partly even reinvention is reinforced in the policy document that carves out a Digital Agenda for the Prison and Probation Service. According to the digital agenda of the Swedish Prison and
Probation Service, there are five areas and aims to employ smart technology (Draft version October 2018):

- Digital resources are used to overcome social isolation;
- Incarcerated individuals are prepared for a life in freedom in a digital society;
- Digital resources simplify and make more efficient the work with incarcerated individuals;
- Recidivism is followed-up with the help of digital resources in the work with incarcerated individuals;
- Security needs to be balanced with the need to use digital resources.

The visions for the prison of 2026 that are developed in the digital agenda policy document can be summarized according to the access to digital media technologies that is envisioned for different groups. Table 1 summarizes these visions according to the different users.

Based on how digital technologies are conceptualized in and through the Krim:Tech hub and the Digital Agenda, we have identified three major areas of smartification: (a) smart technology for surveillance purposes, (b) smart technology for administrative purposes and (c) smart technology in the rehabilitation work with people who are incarcerated.

**Smart technology for surveillance purposes**

Although the use of digital media technologies in the prison context is still limited, there are increasingly areas where such technologies are employed. The most common ways that digital technologies make an entry into prisons are solutions offered by different companies that allow for ubiquitous computing to track, manage and control prison populations. Smart CCTV systems that analyse behavioural patterns and that detect suspicious
behaviour are, for example, one such feature, while audio surveillance systems can analyse conversations within the prison and phone calls to the outside is another. Singapore has started to work towards a ‘prison without guards’ in which such technologies will be responsible for all the surveillance and control needed in the correctional facility (Prison Insider, https://www.prison-insider.com20170413). While often the increased efficiency and the cost-saving potentials of digital technology are highlighted, the downside of a prison without guards is the loss of interpersonal exchanges between the guards and incarcerated individuals that support rehabilitation rather than control.

One example of smart digital technology for surveillance purposes in the prison context is Spartan by Guardian RFID (see Figure 2). The android-based handheld device is equipped with RFID, wi-fi, push-to-talk as well as high-resolution imagining to be used to automate security rounds, for headcounts, inmate activity tracking and more (Figure 2). The website advertising the device suggests to

centralize your inmate identification, security rounds, and activity logging into one powerful platform that integrates with your jail or offender management system. Maximize your defensibility, mitigate risk, and gain lightning-fast, real-time reporting with corrections most powerful Command & Control platform.

The website of Guardian RFID gathers not only various case trials and blog posts about the advantages of moving towards RFID logging and cloud services, it also collects the voices of administrators, wardens and Sheriff office officials. Most of the blog posts and user testimonies are concerned with the increased efficiency in controlling and supervising inmates in real time and with less error, including the following:

Real-time Insight:

GUARDIAN RFID helps us make data-driven assessments about inmate observation and classification levels. We’re measuring staff performance on our security rounds in real-time, which helps us manage compliance with jail standards.

| Group                  | Media technologies                                                                                                                                 |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Incarcerated individuals | AI-based personal assistant that guides the incarcerated individual through the day<br>Access to online therapy<br>Transitioning into serving sentence at home with the help of tracking devices |
| Guards                 | Develop specific rehabilitation programmes with external experts via video calls and data exchange                                                   |
| Administration         | Health checks are administrated online<br>Data sharing with other public service institutions                                                                 |
| Visitors/family members | Daily contact with incarcerated family member via video visitation from cell                                                                               |

AI: artificial intelligence.
Lt. Belinda Jackson  
Brazos Co. Sheriff’s Office  
Bryan, Texas (https://guardianrfid.com/about)

Hence, it is not only the prison population that is controlled and supervised efficiently with the help of Guardian RFID, but also the guards and other members of staff. Besides selling specific devices, Guardian RFID also offers help with the complete outsourcing of server capacity, storage and processing of the data that are collected automatically.¹

Common for the attempts to use digital technologies to survey and control prison populations is then that the collection of a range of different kinds of data in common and remotely stored databases opens the possibility for analysing them in real time, with the goal to predict unwanted behaviour among the incarcerated individuals. The Offender Management System developed by GTL, for example, promises to collect and handle ‘information on all aspects of an inmate’s incarceration’.

**Smart technology for administrative purposes**

Like other public authorities, the Swedish Prison and Probation Service is working with smart algorithms for automated decision-making within the administration. An algorithm that supposedly should help to organize administrative work more efficiently has been introduced in the headquarters of the organization. During informal conversations
with employees of the Prison and Probation Service, it has, however, been described as a failure in terms of the actual time saved with the help of the algorithm. The main purpose of the algorithm was to automate certain internal decisions that could be compared to the similar forms of automated decision-making in public sector institutions (see report Automating Society, Algorithm Watch, 2019).

Automation of administrative tasks with the help of algorithms has not been frictionless for the Prison and Probation Service. The reason for why such technologies should be introduced is efficiency and speeding up the administration process. Tedious and repetitive work tasks should be automated and delegated to digital technologies, so the idea, to overcome the notorious slowness of public administration. At the same time, automation bears the risk of limiting discretion and flexibility in decision-making of administrators as well as guards.

**Smart technology in the rehabilitation work with incarcerated individuals**

An example of how smart technologies are used for rehabilitation work with people who are incarcerated is the *Utsikt* (view, prospect, outlook) application that is used in probation (Figure 3). The application has been developed by Krim:Tech since 2015 with support by the state agency for innovation Vinnova and is the first of its kind developed for the prison context (Kriminalvården, 2015). During a trial period in spring 2017, a group
of 19 individuals on probation has tested the application and afterwards assisted to improve certain functionalities (Kriminalvården, 2017). The application is downloadable for free and is adjusted to the individual needs of the specific client during a meeting with the probation officer. The client needs an Iphone 5s or later or an Android version 5 or later as well as an appstore or Google play account. These preconditions are potentially challenging for some of the clients especially those that served long prison sentences (Jewkes and Reisdorf, 2016).

According to the project leader for the development of the application, Lena Lundholm, the main purpose of the application is to improve the attendance of probation meetings and provide the clients with pre-emptive exercise derived from cognitive training in challenging situations. The application includes, for example, breathing exercises for stressful encounters as well as hotlines that provide support in critical episodes to prevent recidivism (Figure 4). Furthermore, clients can keep track of their mood with the help of a journal function and are provided with different scenarios for problem-solving (Figure 5). Different descriptions of the application emphasize that it is merely used to prevent recidivism and not to control or supervise clients. The use of the application is voluntary and it is considered as a tool for the clients that complements the work with probation officers. All data that are collected through the application are inaccessible by officers of the Prison and Probation Service or so it is promised. The only link between the Prison Services and the application is that meetings will be automatically synchronized with the calendar. No data are saved by the Prison Services and it is the responsibility of the clients themselves to take care of backup copies. The users, however, have very little insight into the backend of the application.

The main goal of the application is, hence, to pre-empt recidivism with the help of cognitive therapy exercises that are programmed into the application. In crisis situations, the clients are supposed to find help within the application, either by way of breathing and mindfulness exercises or support hotlines that are integrated into the application.

Diverging temporalities of the smart prison

The experience of time and the loss of temporal autonomy is one of the major topics discussed in ethnographic accounts of life inside the prison. In her seminal article, Medlicott (1999), for example, describes the prison life as consisting of endless repetitions and the temporal ambivalence of the incarcerated individuals’ experience of, on the one hand, suspended ‘normal’ lives, while on the other hand, their bodies and identities age. The structure of time in prison differs considerably from that of everyday life and is characterized by a suspension of the life outside, endless repetitions and strict schedules imposed on the inmates (Meisenhelder, 1985). People who are incarcerated are losing their temporal autonomy as they are disciplined through these time-based routines and completely exposed to external authority regulating their time use that is translated into excessive counting and observing of incarcerated individuals. The experience of waiting in a prison visitors’ centre becomes, for example, part of ‘pains of imprisonment’ (Sykes, 1958) that encompasses both visitors and incarcerated individuals. The painful temporality of the prison is extended beyond the walls into the lives of family members and friends of people who are incarcerated (Foster, 2016). The waiting and loss of temporal
autonomy particularly emerges out of uncertainty and unpredictability, especially during custody or detention (Turnbull, 2016). In this context, Kotova (2018) develops the notion of temporal pains of imprisonment to analyse the experiences by female partners of long-term incarcerated individuals in the United Kingdom. She argues that the prison time extends beyond the visitation time and that research also needs to consider the deprivation of mundane family experiences as a consequence of the prison sentence.

In this context, the processes of adaptation and change over time are particularly important and are captured in temporal metaphors such as dead time, out of time, doing time that represent the permanent state of waiting and suspension of life. The penal power of the prison is expressed exactly through the disciplinary function of waiting, while the temporality of waiting is translated spatially into the prison cell (Armstrong, 2015). The incarcerated individuals are, however, not only punished through being put into the specific space of the prison (and the prison cell), but also in terms of compartmentalized temporality, that is, time is sliced up into spatiotemporal boxes that line up into a linear narrative of punishment, prison sentence and rehabilitation. However, the key point of the prison and other disciplinary institutions is not to produce the

Figure 4. (a) Breathing exercise and (b) calendar function of the Utsikt application.
ideal subject as an actually existing one, but to reproduce the idea of this subject that is impossible to be realized (Armstrong, 2015). Hence, this impossibility of achieving the ideal subject becomes the productive motor of repetitive and eternal processes of control. The future in the prison context is often only implicated in terms of rehabilitation.

These layers of temporal experiences by incarcerated individuals are complicated with smart digital technologies that emphasize temporalities that run counter to the lived experience of time. As we have seen from the analysis of smart digital technologies used in the prison context, there are three major temporalities that are emphasized: (a) velocity and speed that are linked to the real time of data gathering and analysis, (b) prediction and (c) pre-emption. First, real-timeness refers to the appeal to track practices, developments and environmental changes in high speed. Velocity refers to the tracking rather than the analysis as it takes time to compare the recorded data against previous data sets (Cheney-Lippold, 2017). However, the velocity of real-timeness is not as straightforward as it seems (Weltevrede et al., 2014). Different platforms and applications produce different temporalities and rhythms of real-timeness of devices and digital platforms. Hence, the notion of real-timeness of datafication is much more complex.

Adding to these complications, we argue that the dominant temporal regimes linked to smart digital technologies are the seemingly future-oriented temporalities of

Figure 5. Cognitive therapy–based problem-solving exercise (positive stop card and negative stop card) as well as pre-programmed support hotlines (Prison and Probation Service; Healthcare Service; Suicide Hotline).
anticipation, prediction and pre-emption that are a result of real-time tracking. Anticipation refers to the act of looking forward to a later action by relying on data of past behaviour. According to Ben Anderson (2010), anticipation is concretized through two ‘anticipatory practices’: prediction and pre-emption. Prediction refers to foretelling the future based on observations and experience, which is perfected in the context of smart digital technologies, since the likelihood with which a certain development will appear can be calculated on ever larger amounts of data. Pre-emption refers to practices and acts that prevent certain developments and behaviours from taking place. The aim is to forestall and preclude harmful threats. Based on predictive calculation, pre-emptive actions are also supposed to prevent concrete determinants from emerging in the first place. Following these definitions, the anticipatory practices of prediction is a presupposition for pre-emptive activities. Calculations based on big data that are at the heart of anticipatory practices seem to be addressing the future, prediction is inherently conservative and past-oriented as it is based on historical data (Cheney-Lippold, 2017). Anticipatory practices such as prediction and pre-emption, rather than being future-oriented, hence reproduce and reinforce assessments and decisions made in the past and contribute to a programmed vision of the future.

Smart digital technologies are seemingly about future-oriented temporalities, however, anticipation, prediction and pre-emption constitute a multiplication of the present rather than the future (Coleman, 2018). The temporalities of smart digital technologies are in that sense not about projecting a visionary future that needs to be actively constructed but instead reinforce established models and analyses. Rather than being concerned with the future, temporalities of smart digital technologies seem to be trapped in the past and present.

From the outset, smart media technologies seem to create an increasing desynchronization of the different modes of prison time. For the individual inmate, the experience of doing time is often one of slowness, routine, waiting and the general – and intentionally created – feel of time (one’s individual life-time) as inhibited or put on hold. The smart digital technologies increase, on the contrary, the pace of data collection and processing that is – and always has been – a part of how time is ‘done’ to the inmates. When procedures of gathering and making sense of data is increasingly automated and integrated in smart systems, they can furthermore produce immediate results and actions. For example, a deviant pattern of movement might lead to the automated response of a lockdown within a smart CCTV system. The fast pace of technological temporal regimes, then paradoxically, serves the purpose of increasing or at least maintaining the slowness, routine and inhibition of time that is the existential experience of the inmates; since the purpose of surveillance and control is to make sure that nothing (unexpected) happens. Unexpected means here that the prison institution is organized based on programmed future visions of correct behaviour of both inmates and guards that is enacted with the help of smart technologies. This programmed future vision of the prison relates to the dimension of smart surveillance and control and the increased importance of past actions for the patterning of the inmates’ existence and for future predictions. Since a multitude of different kinds of data is not only collected but also stored and continuously analysed, and since smart systems rely on predictions from past patterns, this temporal dimension
becomes increasingly important for the management of incarcerated individuals and the predictions of their future that is used in attempts to rehabilitate them and help them adjust to a future life outside of the prison. Paradoxically then, the speeding up and increased efficiency that is promised by smart technologies reinforces the experience of trapped temporality of incarcerated individuals, while they remain objects rather than subjects of emerging temporalities of smart technologies and hence are included in ‘the digital imperative’ only one-sidedly.

Conclusion

Smart technologies will help reinventing prisons, both in terms of administration and penalty. This is the dominant idea in the discourse on the smart prison in the Swedish context and beyond. However, changes related to the incorporation of smart technologies in a multi-layered, heterotopian context such as the prison are not straightforward. Looking at different temporal layers as one site where the multidimensionality of prison unfolds, we have shown the paradoxical and ambivalent effects of smart technologies. Contributing to an intensification of future-oriented temporalities such as anticipation, pre-emption and prediction, smart technologies currently enhance a temporal desynchronization between the lived experiences of incarcerated individuals and the potentiality of smart technologies. While incarcerated individuals’ experiences seem to be trapped in a precarious now, smart technologies are supposed to point to and implement future visions. The desynchronization between lived experience and technological imaginaries is not only characteristic of the smart prison, but it is enhanced in the context of prisons as heterotopian places that are both upsetting, intense, different, and a mirror of the outside world. These temporal divides are emblematic for the social and political implications of smart technologies also in other contexts, for example, the smart city.

This article has been focusing on the notion of the smart prison while linking to discussions of the smart city that is to a large extent still future visions rather than reality. Future studies should explore the implications of smart digital technologies comparatively across different sectors dealing with impoverished and vulnerable populations, for example, comparing the smart prison with forms of algorithmic automation in welfare state institutions and the use of AI in the health sector, to identify shared logics while acknowledging the situatedness of technology-related implications.

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1. https://guardianrfid.com/blog/why-jails-should-switch-to-mobile-inmate-tracking, accessed 29 January 2019.
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