Rathenau Instituut

Valued at work

Limits to digital monitoring at the workplace using data, algorithms and AI

Report

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Preface

There is a great deal of political and societal debate about the future of work, and what skills will be needed in the workplace. Many of us already find it impossible to do our jobs without a computer, smartphone or other digital tools. In the years to come, robots and artificial intelligence will continue to transform our work.

Discussions about the future of work have tended to overlook the fact that new technologies not only help employees do their work, but also track their behaviour. Consider, for example, a surgical robot that keeps track of how long a surgeon operates or an online assessment that uses artificial intelligence to gauge job applicants' competencies by having them play games. Digital tools support many organisations' wish to take informed decisions about how to organise their work and their workers in a bid to further optimise what they do.

This report, commissioned by the Dutch House of Representatives' Social Affairs and Employment Committee, describes the outcomes of our investigation into the influence of digital monitoring technology on job quality. Our study consists of a literature review, interviews and an analysis of relevant legal frameworks.

Our report shows that the tools can impinge on worker privacy, lead to discriminatory recruitment and selection practices, and increase workloads. Moreover, the underlying view that humans can be 'captured' in data produces too limited a notion of the value of work. In other words, while organisations are seeking to maximise work value, they are in fact in danger of undercutting the value of work.

The Rathenau Instituut believes that there is a need for a broad public and political discussion of the appropriate use of data in the workplace. We hope that our report will contribute to that discussion. After all, the value of work involves more than data alone suggests.

Dr Melanie Peters
Director, Rathenau Instituut

Summary

A growing number of organisations are using new digital technologies to track their workers. They collect information about them and then use algorithms and artificial intelligence to analyse the data so that they can gauge workers' suitability, assess their health and appraise their work. We call these technologies digital monitoring tools. Organisations expect these tools to help them make informed decisions and thereby optimise the value of the work.

In this report, commissioned by the Dutch House of Representatives' Social Affairs and Employment Committee, we explore what new methods of tracking, analysing and giving feedback to workers mean for job quality. We look at three key dimensions of this concept (earnings quality, labour market security and quality of the working environment) and at broader social and ethical aspects. We investigate a series of questions: What does tracking mean for worker privacy and for creating an inclusive workplace? Do these tools in fact increase the value of the work? Our study consists of desk research, a literature review, interviews and an analysis of relevant legal frameworks. The study was carried out between June 2019 and March 2020, and contributes to the knowledge base under the agenda theme 'Changing labour market' of the Committee.

The specific impact of digital monitoring technology for job quality depends on many different factors. For one thing, the digital tools are not all alike. This report shows that there is now a vast array of tools available. We have grouped them into three categories: tools for staff planning and hiring, tools for managing and instructing workers, and tools for their support and development. Organisations can choose the level at which they wish to use the tools (individual, team or organisation) and at which of these levels they will provide feedback. They can also analyse data for retrospective purposes (historical trends in remuneration or absenteeism), to look for connections (for example between leave and absenteeism), or to predict trends (for example, future absenteeism).

Because organisations differ, each tool can impact job quality in a different way. That impact also depends on how organisations choose to deploy the technology. Despite the differences between organisations and tools, our research has revealed some broad trends.

Digital monitoring tools can be detrimental to workers
We see that various digital tools can be detrimental to workers. This may be especially the case when they influence decisions on a candidate's or employee's

eligibility for a job, promotion or contract renewal. There are also concerns about privacy and discrimination. Specifically, as such tools can collect sensitive data, including email, location, movement and sleep patterns, facial expressions, and even hereditary traits. As a result, they may impinge on worker privacy. And although artificial intelligence and algorithms have the potential to mitigate discrimination in job application procedures, the risk of discrimination often remains.

Little proof of validity in some cases

In addition, the tools have only limited success when it comes to worker analysis. They are often used to analyse complex matters, such as suitability, motivation, health and productivity and base some of these analyses on questionable connections, for example between facial expression and personality, or between DNA and competencies. There is scant evidence for the validity of various tools. Our respondents caution organisations to beware of ‘cowboys’ operating in this market.

Human beings are difficult to ‘capture’ in data

Organisations must realise that it is difficult to gauge the value of work even with the help of digital tools, algorithms and artificial intelligence. For example, research has yet to reveal the extent to which we can predict human behaviour, such as the likelihood of an employee leaving an organisation or of a candidate being suitable for a job. Assessments using artificial intelligence rate applicants based on the attributes of the most successful employees, but in doing so, they create a similar-to-me-bias. Moreover, it may be underestimated how much those working quietly behind the scenes contribute to someone else’s high performance.

There is a risk that the analysis will focus only on what is quantifiable and ignore other essential activities or personality traits. Although a numerical workplace analysis can be useful, it may overlook other valuable aspects of work. Moreover, the underlying view that humans can be ‘captured’ in data produces too limited a notion of what valuable work is.

Monitoring technology changes work processes and workplace relations

Using digital monitoring tools can change work processes and workplace relations. Choosing to track a certain aspect of work puts that aspect under the microscope. The organisation and its workers then act accordingly, potentially producing unintended and, occasionally, counterproductive effects. While it may seem productive to monitor call centre performance by tracking the number of calls employees handle in a given time frame, the result may well be stressed-out employees and dissatisfied customers.

Organisations that focuses too much on maximising worker efficiency may end up driving up the workload and restricting the professional autonomy of their workers. Are employees at liberty to assess what a customer needs, or to consult with their colleagues when necessary? Giving employees a tool that counsels them on how to cope with their workload gradually shifts the responsibility for addressing such pressure from the organisation to the individual. This means that digital monitoring can be detrimental to cooperation, shared responsibility and even job satisfaction.

Broad public and political discussion about data in the workplace

The quest for a 'data-driven' workplace exposes a dominant rationale in which organisations use data to understand people. We are moving towards a labour market in which quantitative data will be crucial for predicting behaviour and for decisions influencing employment opportunities. The responsible use of digital monitoring tools therefore requires critical reflection, clear communication and dialogue. Organisations should not only be concerned about protecting privacy, preventing discrimination and addressing workload, but must also realise that their digital tools impact workplace tasks, processes and relations, and that monitoring affects the value of work. Despite the growing availability of such tools, the 'data management' of organisations is not always adequate and hinders the use of this type of technology. This means that relevant stakeholders still have the opportunity to anticipate these developments.

The Rathenau Instituut would like to see a broad public and political discussion about the appropriate use of monitoring technology and valuable work. To encourage this discussion, we have identified three starting points.

1. Discuss the appropriate use of data analysis in the workplace

The Rathenau Instituut invites employers' associations and trade unions, online platforms, workers and technology vendors to discuss the use of data in the workplace on the following basis:

- Be realistic about the opportunities and limitations of technology and have an open discussion about what constitutes valuable work. Prevent potential job impoverishment.
- Be cautious about using special categories of personal data and automated or semi-automated decision-making processes, including in job application procedures. Clarify how algorithms work, and apply the principles of proportionality (is the breach of privacy in proportion to the intended purpose?), and subsidiarity (is there a privacy-friendly alternative available?).
- Be aware of the unintentional or undesirable effects of the changing relationships between workers and organisations and between colleagues, suppliers, customers and regulatory bodies. Pay close attention to the position

of technology vendors. Explore the capabilities and terms and conditions of trusted third parties who can manage worker data.

2. Set quality requirements for digital monitoring tools

There is still too little hard evidence on the validity of various tools. This is specifically the case when it comes to recruitment and selection, precisely an area where decisions based on these tools may be detrimental to workers and job applicants. A new code of conduct for recruitment and selection procedures was introduced (by the NVP, the Dutch Network for HR professionals) in February 2020 that requires algorithms to be validated and transparent and potential risks and shortcomings to be clear. There are no further rules governing how this is to be accomplished and neither is it clear who is monitoring compliance and how. The relevant stakeholders should flesh out the details as quickly as possible.

3. Invest in active supervision and enforcement

The current legal frameworks set requirements for the use of digital monitoring tools but it is unclear how certain legal principles should be applied in the workplace. That is why regulatory bodies such as the Dutch Data Protection Authority (DPA) and the Inspectorate SZW (the Dutch labour inspectorate) play an important role in enforcing these frameworks.

Four issues merit special attention in that context:

- Actively enforce the law when it comes to tools that do not meet legal requirements, and offer more detailed explanations when standards prove ambiguous. Work with other regulatory bodies in doing so.
- Be especially attentive when it comes to processing special categories of personal data. The DPA and the Inspectorate SZW could jointly clarify which data (including health data) are required to comply with the Working Conditions Act, good employment practices and the General Data Protection Regulation (GDPR).
- Devote extra attention to addressing workload. Among other things, consider that digital monitoring technology can lead to a gruelling work pace.
- Keep a close eye on the fairness of selection procedures, even when using artificial intelligence.

Contents

Introduction

Smart cameras that check whether the pizza chef has put the right toppings on your pizza.[1] Software that evaluates a video job interview based on facial expressions, language use and intonation and calculates a 'suitability score'.[2] Or software that scans emails in the background to analyse staff engagement in real time.[3]

These are just a few examples of the digital tools available in the workplace today. They measure workers' intimate data,[4] from DNA to keystrokes, and detect patterns that say something about their personality or level of motivation. Organisations use this information to underpin their HR policies, to decide who to hire and who not, or to better monitor someone's performance.

We call these digital tools 'monitoring tools'. They *track*, *analyse* and *give feedback* to workers or organisations.[5] This study divides this technology into three categories, depending on its purpose: tools for staff planning and hiring, tools for managing and instructing workers, and tools for support and development of workers.

Monitoring technology is in itself not new; it is part of working life. Both organisations and workers are keen to know whether they are doing good work, and organisations have traditionally tried to track employee attributes and performance for this reason. In these efforts, they have consistently attempted to strike a balance between employer and worker interests and to find appropriate legal frameworks for the responsible use of monitoring.

Today, however, digital technology is capable of tracking more and more worker data. Little is known about the potential consequences of doing so. Media commentators have raised various issues in this connection. For example: will there be privacy in the workplace in the near future (Kuijpers et al., 2018; Hofman, 2019)? Does monitoring ultimately reduce or increase workload (see, for example, Berghmans, 2016)? Does artificial intelligence combat discrimination in job application procedures or does it reinforce existing prejudices (NOS, 2019; Koolhof,

1 https://www.theguardian.com/commentisfree/2019/oct/15/the-dominos-pizza-checker-is-just-the-beginning-workplace-surveillance-is-coming-for-you
2 https://www.washingtonpost.com/technology/2019/10/22/ai-hiring-face-scanning-algorithm-increasingly-decides-whether-you-deserve-job/
3 https://keencorp.com/
4 All workers, regardless of type of contract (salaried, self-employed, on-call, payroll).
5 Monitor is derived from the Latin words *monitor* (advisor, guide) and *monere* (observe, warn, supervise).

2018)? Does the new monitoring technology alter the balance between organisational and worker interests?

The Dutch House of Representatives' Social Affairs and Employment Committee (SZW) has asked the Rathenau Instituut to examine the impact of these tools on job quality. The resulting report will help in preparing the political debates that the House intends to conduct on this subject. The study was carried out between June 2019 and March 2020 and will allow the Committee to update its knowledge base under the agenda theme 'Changing labour market'.

Purpose and research design

Research questions

The purpose of this study is to understand the impact of digital monitoring tools on job quality and the relationships between organisations and workers. The main research question is therefore: What does the new monitoring technology entail for job quality and how can the technology be used responsibly?

Corresponding sub-questions are:

1. How can we understand the need for monitoring in historical terms, and how has a balance been sought between organisational and worker interests in the past?
2. What types of tools are currently available for monitoring workers? How reliable and valid are they?
3. How do monitoring tools affect job quality?
4. What legal frameworks govern the use of these tools, to what extent are they adequate for new technologies, and what other considerations do organisations take into account when deploying these technologies?
5. Based on the above, what relevant recommendations can be made to ensure the responsible use of monitoring technology in the workplace?

Approach

This study consists of desk research and a literature review, supplemented by interviews with technology vendors, employers, academic experts, trade unions, an employers' association and a gig platform company. A list of interviewees can be found in the appendix. Monitoring appears to be a sensitive issue for organisations. A number of them stated that they were currently addressing it but did not wish to participate in our study.

In this study, we discuss a selection of tools of US and Dutch origin that are currently available. The purpose of the study is not to provide a quantitative survey of how many Dutch organisations use these tools, and how they are perceived. Joost Gerritsen of Legal Beetle analysed the relevant legal frameworks on our behalf by studying legislative texts and the rulings of regulatory authorities and the courts on this subject. The research was carried out in accordance with the Rathenau Institute's quality policy. A staff member who was not involved in the study conducted an internal review.

Terms: worker, employee, employer

All sorts of organisations are using digital monitoring technology in the workplace. We use the term 'workers' to make plain that we are referring not only to those in paid employment; these new technologies are also being used to monitor people who work as temps or as freelancers, in some cases through an online platform. We also use the term 'organisations' because our study covers not only employers but also intermediaries such as online platforms and other principals/clients.
The terminology is important because certain rights are specified in the context of an employee-employer relationship but do not always apply in a client-contractor relationship, for example. That is why Chapter 4 (on legal frameworks) and Chapter 5 (conclusions) explicitly use these different terms. Chapter 1 (history) also refers to employers and employees.

Relationship between digitalisation, the future of work and job quality

Workers are surrounded by technology. In many cases, people cannot do their job without using machines and sensors, a computer, a smartphone or social networks and cloud services. All this fits in with broader trends in the digitalisation of work, including automation, robotisation and the platform economy.

Some years ago, the public debate centred mainly on digitalisation and the *quantity* of work: will jobs disappear because of robots and artificial intelligence (AI)? Oxford researchers Frey and Osborne caused a stir in 2013 when they published a study claiming that half of all jobs were susceptible to computerisation. Many reports have tempered this fear. It is clear that robotisation and automation will replace some jobs (in 2019, the OECD estimated about 14%), but what is more important is that the nature of work will change (Van Est and Kool, 2015; KVS, 2015; Went et al., 2015). Researchers are now more interested in the *types* of jobs of the future. How will they change, and what skills will be needed to do them? And will the work be *good work*?

The 'job quality' concept is gaining ground in policy discussions. In early 2020, two reports, one by the Scientific Council for Government Policy (WRR) and the other by the Committee for the Regulation of Work (installed by the Dutch Ministry of

Social Affairs and Employment), drew explicit attention to job quality (WRR, 2020; Commissie Regulering van Werk, 2020).

The focus of the present study is the phenomenon that technology can be used to *monitor* workers even if digital tools are not primarily intended for this purpose. On the one hand, we see devices and systems being used 'alongside' the work, such as a camera system that observes employees, or a time clock that records working hours. On the other hand, we see devices that become 'part' of the work. One example is a surgical robot that not only helps a surgeon carry out her work but can also keep track of *how* she does that work and compare her performance with that of other surgeons.[6] Another example is the police bodycam that, in passing, also records conversations between police officers. The Australian media reported that two parking attendants were fired because their bodycams had recorded a conversation in which they criticised their boss (Hussey, 2017).

Finally, gig and freelance platforms continuously track, analyse and manage their services digitally (algorithmic management). Platforms therefore reinforce the trend we are examining in this study.

Reader's guide

Chapter 1 offers a brief *history of workplace monitoring*. It explains how and why employers have traditionally sought to analyse their employees potential and performance and how this fits in with a tradition of continuously optimising and rationalising work. The chapter also explains how the trade unions and government authorities led the quest to strike a balance between organisational and worker interests.

Chapter 2 discusses the *new opportunities offered by monitoring technology*. We examine the potential and technical limitations of different tools, which we divide into three categories:

1. tools for strategic staff planning and hiring;
2. tools for managing and instructing workers;
3. tools for support and development of workers.

The chapter shows that monitoring today differs from earlier attempts in a number of respects, and that organisations have a much more detailed picture of their workers as a result.

6 Some hospitals use a 'black box', which tracks data from the systems used in the operating theatre. The point of this is not to judge individual surgeons but to learn from mistakes. https://www.volkskrant.nl/nieuws-achtergrond/amc-zet-zwarte-doos-in-operatiekamer

Chapter 3 considers how monitoring technologies affect job quality. We identify three dimensions of that quality: earnings quality, labour market security and quality of the working environment (such as a safe and healthy workplace, work-life balance, work pace, workload or professional autonomy). The tools can have either a positive or a negative impact, depending on the choices organisations make when setting up their systems and on how the work is organised. We show that the impact of these systems goes beyond the above three dimensions. Digital monitoring affects what we regard as valuable work.

Chapter 4 discusses *relevant legal frameworks* that govern the deployment of monitoring technology. We have paid particular attention to the frameworks created by constitutional guarantees, the General Data Protection Regulation (GDPR), employment law[7] and the Dutch Works Councils Act and Working Conditions Act, and anti-discrimination legislation. We show what the laws require and consider the extent to which they offer adequate guarantees in the light of the new technological capabilities. In addition, we discuss what organisations consider when deploying monitoring technology in the workplace, and what various actors think of this.

Chapter 5 summarises the key findings. Monitoring tools affect what we *count* as work and impact what we regard as valuable work. Work, and human beings, cannot be fully captured in data. Not everything is quantifiable. What's more, the technology is changing workplace relations, something that may have adverse consequences for workers. That is why we are drawing attention to the impact of workplace technology. We also enumerate various criteria for using the technology responsibly.

7 For example the sections in the Dutch Civil Code concerning the employment contract, the contract of assignment, etc.

1 A history of workplace monitoring

1.1 Introduction

Technological advances are making it cheaper and easier to track, analyse and instruct workers. The technology is expanding the scope of possibilities, but workplace monitoring is in itself nothing new. Employers have always tried to track their employees' performance and attributes. However, the way in which they do so has changed over time.

In this chapter we outline the history of this aspect of the employment relationship and how monitoring has become an integral part of it. We examine historical highlights in the history of workplace monitoring. Drawing on literature reviews in such fields as labour sociology, human resource management and other social sciences, we show which factors play a role in the continuous quest to strike a balance between employer and employee interests. We also borrow from the report *Working on the robot society*, in which the Rathenau Instituut provided a historical overview of the influence of technology on work (Van Est and Kool, 2015).

1.2 Monitoring as a historical continuity

Planning and monitoring systems of all sorts have been around since antiquity. The ancient Egyptians had supervisors keeping an eye on the workers who built the pyramids. Labour and cooperation between workers always require some degree of management and instruction. In the course of time, they have become part and parcel of the employment relationship (Ball, 2010). Throughout history, workplace monitoring evolved as a function of the way in which the production process was organised.

In the 1936 classic *Modern Times*, Charlie Chaplin takes aim at the rationale of industrial capitalist production. When Chaplin, playing a factory worker, lights a cigarette during his toilet break in a frantic attempt to calm himself down, the factory boss suddenly appears on a screen on the wall. 'Quit stalling, get back to work! Go on!' he snarls. The film offers a comical take on how the far-reaching rationalisation of the production process had resulted in extreme forms of worker monitoring.

Labour sociologists such as Albert Louis Mok often point to the rise of modern industry as an important tipping point in the thinking about human capital and labour

(Mok, 1990). The Industrial Revolution brought about a radical transformation of production processes, labour relations and organisational structures. Industrialisation was linked to certain forms of production planning and bureaucratisation. This resulted in a strict disciplinary regime for labourers, with monitoring being widely used for the first time (Edwards et al., 2018). Various authors argue that prevailing views on the organisation of human capital and labour of that time still influence the organisation and design of work today (Mok, 1990; Schafrat and Stierhout, 1993; Kluijtmans, 2009). That is why we take the Industrial Revolution as the starting point for our historical analysis of workplace monitoring, and consider how it has evolved since then.

1.2.1 Industrial Revolution and supervision

During the Industrial Revolution, a surge of technological advances set off a transition from manually to mechanically manufactured goods. These changes began in Great Britain in around 1750, with the rest of Europe gradually following in the early nineteenth century. Large-scale industrialisation got a relatively late start in the Netherlands, towards the end of the nineteenth century, and sparked fundamental changes in society and the economy (Schafrat and Stierhout, 1993; Kaufman, 2008; Kluijtmans, 2009).

The first major change was the emergence of large and more bureaucratic organisations. Before the Industrial Revolution, production usually took place in small workshops. From the Middle Ages until the end of the eighteenth century, these workshops were operated by the guilds and their master craftsmen. The employment relationship of that era was based on the master-apprentice principle, with the master craftsman being directly responsible for his apprentices and journeymen. The workshops were small enough for the master to personally supervise the training and performance of his subordinates or the number of hours they worked. This changed with the advent of mass production. The work was now carried out in a much more complex production organisation with different departments, jobs and hierarchical levels. Direct supervision became difficult and had to be organised differently (Lievens, 2015; Looise, 2018).

The second major change was the ‘commodification’ of labour and the formalisation of the employment relationship. When the production process shifted from the private domain to large factories starting in the eighteenth century, labour became wage labour, making it a marketable commodity. This is what distinguishes the capitalist system of production from earlier systems. Moreover, employee and

employer interests no longer necessarily coincided,[8] as had often been the case for the guilds and in family-based production units. Performance and pay agreements became necessary and the employment relationship took on a more formal quality.

The mass deployment of wage labour combined with the formalisation of the employment relationship made it necessary to consider the way in which labour power was utilised in the production process. In the late nineteenth century, this led to the first forms of personnel management. Supervision and control were the main underlying principles, as Schafrat and Stierhout (1993) explain in the anthology *Mens & werk*, a classic Dutch textbook on personnel management. Workers had to be supervised and disciplined so that they remained 'in check'.

1.2.2 Rationalisation of management

Industrialisation continued apace in Europe and the United States in the early twentieth century. Not only did the number of industrial enterprises increase significantly, but their average size also continued to grow. As a result, there was an increasing demand for new techniques for production planning, employee supervision and organisational structuring. Existing theories about the division of labour, standardisation and bureaucratisation were fleshed out and applied (Schafrat and Stierhout, 1993). This came to be known as the 'rationalisation'[9] of management, i.e. the process of controlling the production process and the deployment of labour. 'Thinking' and 'doing' basically became separate activities. Management were tasked with 'thinking', and with 'controlling' the work of employees as much as possible.

Following the lead of Frederik Winslow Taylor, the father of scientific management, a growing number of companies began to organise their production processes to be as efficient and rational as possible. Their primary aim was to eliminate waste and to maximise productivity (Mok, 1990) and to that end, they analysed every job to determine how the component tasks should be arranged for the greatest efficiency. The outcome of these studies then served as a basis for rules stipulating how workers were to perform a specific task and how much time they should spend on it. In a sense, human beings became mere extensions of well-oiled manufacturing plants.

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8 Karl Marx referred to the commodification of labour in his description of industrial society, in which labour became a means of exchange. Marx identified a contradiction between the owners of capital, who wanted to buy labour power at the lowest possible price to profit off the added value of labour, and the working class, which had lost control of the work and had consequently become alienated from it.

9 Max Weber points out that the 'rationalisation of the economic sphere' in Europe began as early as the sixteenth century with the monetisation of the economy. However, the rationalisation of management occurred only after labour had in most cases become wage labour, and it unfolded in the public arena of factories and large organisations.

By applying Taylor's scientific management principles, factory management had the labour process firmly in their grip. The work was divided into a series of simple tasks that made it possible for management to track each employee's productivity. Taylor's approach was interesting for employers because it helped boost efficiency. That was much less the case for labourers, as they were deprived of their professional autonomy and control over the labour process (Mok, 1990). Factory work required little in the way of specific knowledge or skill and turned employees into an expendable means of production. The work was often repetitive and boring, as Chaplin made clear in *Modern Times*.[10]

Taylor's scientific management movement did not find its way to the Netherlands until 1900 and the subsequent two decades. That was relatively late compared with other countries, in part because the Netherlands lagged behind countries such as the USA and Germany with regard to industrialisation (Van Est and Kool, 2015). Another explanatory factor was cultural in nature. Mok points out that many Christian employers in the Netherlands had trouble accepting a theory in which man becomes an extension of the machine. That was less of an issue in liberal circles. It was only during the First World War, when a labour shortage occurred, that Dutch factory owners began to appreciate how scientific management might be used to step up the production process (Mok, 1990).

1.2.3 Employee protection

Historical forces beyond the technical and economic concerns of employers have also helped to shape the management and instruction dimension of the employment relationship. One of these was the evolution of employment law and the rise of the trade union movement at the end of the nineteenth century.

Evolution of employment law

In the early nineteenth century, employment law in the Netherlands was typified by an attitude of *laissez-faire, laissez-aller*. The national government was meant to distance itself as much as possible from civil affairs, and therefore refrain from intervening in the law of contracts and obligations (Jansen and Loonstra, 2013). Employers unilaterally set the terms and conditions in employment contracts, often resulting in miserable circumstances for workers (Paauwe and Boselie, 2017). Manufacturers had their employees working long hours in filthy factories for very little pay. The working conditions were harsh and unhealthy. Employees had almost

10 According to Marx, this resulted in workers becoming alienated from the product, from their work, from their humanity and from their fellow human beings.

no means of defending themselves against injustice and arbitrary decision-making. There was almost no legislation protecting them (Jansen and Loonstra, 2013), and this led to distressing social conditions, referred to in the Netherlands as the 'great social question'.[11] The final two decades of the nineteenth century were marked by discontent and unrest in society, and this was also the period that saw the rise of the trade unions (Looise, 2018).

The spectre of revolution made people in the upper echelons of society think. They began to realise that the situation was no longer tenable. The power relationship between employee and employer had become completely skewed. Employers held much more power than employees. Increasingly, there were calls to improve employees' legal protection, even in liberal circles. For example, in the late nineteenth century Hendrik Lodewijk Drucker, a Dutch liberal politician, raised the issue of the power imbalance between employee and employer. He argued that the degeneration of labour into a commodity had profound implications for the power relationship between employer and employee.[12]

A parliamentary enquiry followed and committees were set up to investigate the plight of labourers. Not only had the formalisation of the employment relationship turned it into a *legal relationship*, but wage labour had evolved into a social phenomenon. According to Levenbach, often regarded as the 'father of Dutch employment law', the Industrial Revolution accelerated the evolution of employment law (Jansen & Loonstra, 2013). At the turn of the century, Dutch labourers saw their legal position improve with the introduction of a series of laws that included the Labour Act in 1889 and the Accident Act in 1901, and with the establishment of the Labour Inspectorate in 1890. In 1909, the Labour Agreement Act came into force.[13] It represented an important breakthrough, giving labourers at least some contractual protection that employers were obliged to respect. It also made very clear that the government was not powerless to act. Mok (1990) describes it as 'a modest, but fundamentally important starting point for growing government intervention in job quality'.

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11 In 2019, the Borstlap Committee on the Regulation of Work too referred to a 'great social question', i.e. the growing inequality between flexible workers, the self-employed and salaried employees in terms of rights, obligations and security.

12 Drucker, writing in 1887: 'The employment contract of today involves a certain degree of inequality between the parties, one that is permanent and inherent in the nature of things. When labour power was emancipated and became an ordinary commodity, its peculiar nature was overlooked. Leaving aside the close relationship between labour and humanity itself, it is an ongoing social phenomenon that the worker *must* sell his product, his labour power.'

13 The Labour Agreement Act did not amount to much by today's standards and has been amended many times since, but it did represent a breakthrough in that the government began to intervene in the 'great social question'.

Influence of trade unions on personnel policy

The rise of trade unionism in the late nineteenth century played an important role in establishing legal protection for employees. Mechanisation met with resistance wherever it was introduced, with the machine being perceived as a threat to wages and employment (Mok, 1990). The trade union became a major means of defence against the social impact of industrialisation.

Several authors point out that employers started looking after their employees better in a bid to stave off the emerging trade union movement (Kluijtmans, 2009; Schafrat and Stierhout, 1993; Mok, 1990; Looise, 2018). The unions, in turn, were forced to agree to exchange job control (i.e. giving management the power to say how the work should be performed) for better wages. They were in fact locked into the pursuit of better material employment terms, while worker autonomy and authority remained limited.

However, employers also started to realise that they had a certain self-interest in promoting their employees' well-being. Not only could they eliminate the trade unions in this way, but they also saw that an intensive production process stood to benefit from fit and healthy employees. Some enterprises started offering employees special work and family amenities, such as recreational programmes, medical care and even company-provided housing (Kaufman, 2008). To properly organise these activities, they created whole new departments, in the US referred to as 'Sociology Departments', which employed company teams of sociologists and psychologists. One consequence is that employers began to interfere in their employees' private lives.

In 1914, the Ford Motor Company began an experiment in which it monitored worker hygiene and health. Ford had recently introduced the moving assembly line, increasing the volume of production dramatically. But there was also a downside: labourers struggled to keep up with the pace and many of them left shortly after being hired. Ford's solution was to double wages in the hope of eliminating worker turnover. There was one important condition, however: Ford demanded that employees lead 'a clean, sober and industrious life'. They had to live healthily and cleanly, keep their homes clean, and bathe regularly with soap and water. The company even had inspectors make unannounced calls to check whether employees were actually adhering to these rules (Manokha, 2019).

The Netherlands had its own 'factory villages' in the late nineteenth and early twentieth centuries, built by employers to house their employees. Well-known examples are Philipsdorp in Eindhoven and Rode Dorp in The Hague. There were several advantages to this arrangement: it meant that employees lived close to the

factory and that they had clean, good quality housing and could take part in company-run educational programmes and leisure-time activities.

This period saw the start of more modern forms of personnel policy in which employee welfare was also considered. Even so, the personnel department remained isolated within the organisation for a long time. Job content and organisational processes were not considered subjects over which a personnel officer had any competence. They remained the exclusive domain of engineers and technical staff specialists (Schafrat and Stierhout, 1993).

1.2.4 The work organisation of the twentieth century

Although the rationalisation of management in the Netherlands began in around 1900, it flourished between the First World War and the 1960s (Visscher, 2002). Ben Dankbaar, a Dutch emeritus professor of innovation management, points out that it also played an important role in the period of post-war reconstruction in the Netherlands (Dankbaar, 2006). In the altered social and political circumstances that followed the Second World War, the proceeds of productivity gains were used mainly to rebuild the country. In the meantime, the trade unions had become institutionalised and gained ever more influence.

During the period of reconstruction, the trade unions agreed to accept modern, ‘rational’ methods for increasing productivity in return for higher wages, improvements to the social security system and recognition of trade unions as legitimate representatives of workers’ interests (Dankbaar, 2006). The combination of productivity growth in industry and rising purchasing power for the working population ushered in an unprecedented economic boom that gave birth to the social democratic welfare state. As a result, the debate about the influence of modern production methods on job content and worker autonomy was pushed to the background.

After the 1960s, a succession of economic and social crises heralded the end of post-war growth. For the first time in years, critics began questioning the quality of employment in industrial mass production (Dankbaar, 2006). The 1970s even saw a revival of Marxist ideas in the social sciences. One of the most influential books on work organisations published in those years was political economist Harry Braverman’s *Labor and Monopoly Capital* (1974). Braverman analyses scientific management and the capitalist labour organisation, focusing on the key concept of workplace ‘control’. In his view, the historical development of the workplace organisation was characterised by the *increasing level of control* over the labour

process exercised by management and the constant erosion of job content owing to their emphasis on rationalisation and efficiency.

By the late 1970s, many organisations were abandoning Taylor's scientific management principles and work became more attuned to human capacities and needs. In the emerging services sector, the thinking increasingly focused on the concept of human resources, which emphasises people as a success factor for the smooth functioning of an organisation. The underlying principle is that an organisation's people are not a cost item but an 'asset' that needs to be properly look after. It was during this period that the spotlight shifted to the qualitative aspects of work, with the coercive rhythm of machinery and the cyclical repetition favoured by scientific management principles coming in for particular criticism.[14]

Nevertheless, human resource management also adopted a fairly business-oriented approach (Paauwe and Boselie, 2017). The human being may well be crucial, but only from a functional vantage point. In effect, 'human resource management' refers to 'the management of the human factor of production'. Human beings are regarded as a raw material, in other words, and employees are, once again, deployed as efficiently as possible in the production process. Moreover, the HRM movement also involved a quest to make employees and their productivity quantifiable. Books on 'human resource accounting' published in the 1970s encouraged organisations to look at HRM in a more statistical light (Dorenbosch & Brugman, 2017). The idea was that personnel policy would be more effective if better quantification and evaluation methods were applied, with financial data being especially pertinent.

A sharp rise in unemployment during the 1980s caused the focus to shift away from job quality. In addition, advances in microelectronics fuelled a new surge in workplace automation (Dankbaar, 2006). With the rise of information technology in the 1980s, the service sector also came under the spell of industrial efficiency concepts (Van Est and Kool, 2015). IT was employed to restructure the sector and, where possible, split up the work into simple sub-tasks that could then be automated. The focus of rationalisation went beyond physical tasks to include cognitive labour processes. Computers were used to digitise work processes, with surveillance in fact being 'built into' the workplace infrastructure (Edwards et al., 2018). As a result, surveillance gradually went from being analogue to being digital.

14 Ben Dankbaar (2006) argues: 'There was a particularly vehement attack on one of the characteristics of Fordism: the short work cycle on the assembly line'. One well-known example from this period was the Volvo factory in Kalmar, which opened in 1974. There, cars were produced not on a moving assembly line but at stationary workstations over a longer work cycle.

Towards the end of 1980s, more researchers became interested in workplace ‘surveillance’, for example in call centres and among lorry drivers. In the United States, the then Office for Technology Assessment (OTA) published a wide-ranging study on *The Electronic Supervisor* (1987), which concluded that worker privacy might be at risk and that monitoring causes stress and may be used dishonestly by some organisations.[15] In 1988, Harvard professor Shoshana Zuboff published her first book, *In the Age of the Smart Machine*, in which she describes the duality of workplace information technology. On the one hand, information technology reinforced the negative aspects of automation, such as loss of autonomy and the demeaning nature of the ‘residual work’. On the other hand, if used wisely, information technology can also upgrade workers’ capacities and skills (Zuboff, 1988).

The flood of technological advances in the 1980s and 1990s caused critics to once again question the balance between workers’ rights and management demands. Digital technology posed new challenges to the power balance between employer and employee. In its report, the OTA called for dialogue between employer and employee representative organisations and government, resulting in further guidelines for the fair use of such tools. Transparency was an important guiding principle in this respect. For example, since then, call centres are allowed to listen in on telephone calls (‘for quality purposes’), but they must always notify the employee and the customer before doing so. In the Netherlands, the 1980s saw various court rulings addressing digital technology, and the data protection authority at that time, the Registratiekamer, also considered this subject in various studies from the 1990s onwards (Registratiekamer, 1994, 1996, 1999).

The internet, mobile devices and sensors became an increasingly important part of working life in the mid-1990s and beyond (Edwards et al., 2018). The new devices make it possible to rationalise work further and to track employees. Researchers and journalists refer to ‘digital Taylorism’, with employee movements and activities being closely observed, studied and monitored (Parenti, 2001; Tobelem, 2017). Once again, discussions have arisen about what data employers should be permitted to use, and in what way. For example, guidelines are expected detailing whether and when employers can read employee e-mails and social media posts.[16]

15 The Netherlands Organisation for Technology Assessment (NOTA, later renamed Rathenau Institute) was founded in 1986 and charged with studying the impact on society of technology, including the advent of ‘microelectronics’. See also https://www.rathenau.nl/nl/over-ons/wat-we-doen/de-man-die-nederland-aan-de-computer-kreeg

16 https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/werk-uitkering/controle-van-personeel

1.2.5 Present-day impact of rationalisation

The regulation of the employment relationship began in the Industrial Revolution and it continues to influence the way we think about human labour to this day (Kluijtmans, 2009). The ‘commodification’ of labour power has ensured that employers always need to supervise their employees, as they will naturally seek to gain the maximum from their purchase (Manokha, 2019).

And so it seems that Taylorism has never completely disappeared (Visscher, 2002). At the end of the twentieth century, Taylorist attitudes still played an important role in how work is organised and structured. The exploitation of human potential under the guise of human resource management often had an economic purpose as well, which was to improve employee performance (Schafrat and Stierhout, 1993). Even today, these attitudes continue to play a role, mainly because employees represent the biggest cost item for many companies. Their aim in introducing new technologies and management techniques is simply to control these costs.

The thinking about people and work was heavily influenced by the rise of mechanical production methods. Mok argues that the ‘spirit of quantity’ still prevails in the conceptualisation of work, driven by the wish to control the labour process. During the Industrial Revolution, mechanisation made such control possible for the first time. But the technology has moved on since then and is redefining the concept. History shows that an acceptable balance of power in the employment relationship requires continuous dialogue between employers, employees and governments on the use of monitoring technology.

1.3 Conclusion: seeking a balance

Employers’ need to systematically monitor employees is as old as the phenomenon of wage labour itself. The march of technology constantly gives us new ways to track, analyse and give feedback to employees. However, how this plays out in the workplace itself is not predetermined. Employers and employees must therefore always seek to strike a balance between what is technically *possible* and what is *advisable* on both sides. What is considered advisable may differ from period to period or change over time. Social and political dissent in response to excesses is then enshrined in legislation. The aim today is to examine the societal aspects of innovations in advance and to anticipate their practical impact by introducing legislation and regulatory measures. In the next chapter, we look at the digital monitoring tools that are currently available.

2 New digital tools for tracking, analysing and giving feedback

2.1 Introduction

The previous chapter made it clear that monitoring is part of the modern employment relationship. While monitoring is itself nothing new as a phenomenon, there are now a growing number of digital tools available with which to carry it out (see, for example, Accenture, 2019; ABN AMRO, 2017b). This chapter discusses the various types of digital monitoring tools available today as identified in our literature review, desk research and interviews (for a list of interviewees, see the appendix).[17]

We have divided these tools into three categories, depending on their purpose in organisations (see Figure 1):

1. Staff planning and hiring[18] (section 2.2)
2. Managing and instructing workers (section 2.3)
3. Support and development of workers (section 2.4).

For each category, we look at the reliability and validity of the tools, i.e. to what extent do these systems live up to their promise? In section 2.5, we show how monitoring today differs from monitoring in the past.

17 As stated in the Introduction, the purpose of the study is not to provide a quantitative survey of how many Dutch organisations use these tools, and how they are perceived.

18 When we refer to staff or personnel, we mean all workers, regardless of the type of contract they are working under (salaried, self-employed, on-call, payroll); see also the Introduction.

Figure 1: The three purposes of monitoring tools

Source: Rathenau Instituut

2.2 Planning and hiring

It is important for organisations to have a good idea of their staffing needs. A staff shortage or staff surplus must be avoided, and people must be deployed on work that makes the most effective use of their skills. That calls on organisations to consider which skills they require now and what they will need, and can access, going forward.

In this section, then, 'planning' means strategic staff planning, and not drawing up timetables, rosters and schedules for workers.[19] Since workers are often the biggest

19 However, dynamic scheduling is a mechanism of refractive surveillance (Levy and Boracas, 2018). Surveillance usually means observing a person or group to control that person or group. But information about group A can also be used to control group B. This is called refractive surveillance (see Levy and

cost item, organisations have a growing need to use data to track, analyse and forecast the return on their investment in personnel. In this section we look at digital systems that focus on strategic staff planning (2.2.1) and digital tools for selecting and hiring new staff (2.2.2).

2.2.1 HR analytics

'HR analytics' is something of a buzzword. Businesses may also refer to 'people analytics' or 'workforce analytics'.[20] For the purpose of this study, we use HR analytics to mean 'performing statistical data operations to generate information about organisational performance' (see also Van den Heuvel and Freese, 2017; AI and Doze, 2018).

HR analytics are meant to replace labour-intensive methods such as manually combining and studying Excel sheets. HR analytics delivers information much more quickly, even in real time. At the touch of a button, we get up-to-date 'facts': the size of the workforce, staff turnover figures, or the best-performing individuals or teams (see Figure 2). The promise of HR analytics is that staffing decisions can be fact-based, drawing on the information that the software delivers. All this data can make the HR department a better 'strategic partner' for the organisation. Instead of decision-making based on gut feeling, the HR professional can present the management board with concise data visualisations as input for decision-making.

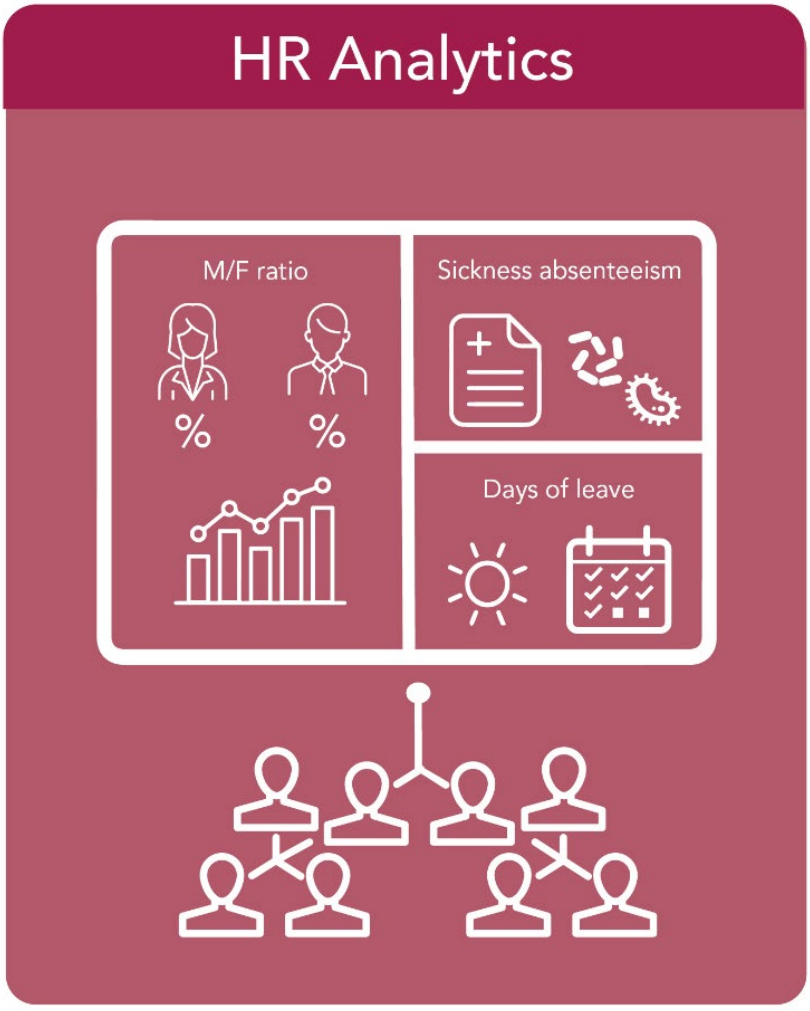
For this study, we spoke to various technology vendors and consulting firms active in the Dutch HR analytics market. They mainly cater for companies in which a clear understanding of career paths and talent development is critical, or where job descriptions are undergoing major changes. We also visited various organisations that have an in-house HR analytics department developing its own tools. These tend to be large companies, given the vast amount of data needed to perform sophisticated qualitative analyses.

Boracas, 2018). This allows staff planning to be optimised by factoring in demand (e.g. crowds, peak times) so as to reduce labour costs. For example, it permits organisations to consider which specific workers they should schedule to work in which situation. Which employees perform best under which circumstances?

20 Software vendor Crunchr uses HR analytics to refer to the analyses that an HR department performs, for example of absenteeism or staff turnover. People analytics refers to analyses using datasets that are not automatically linked to HR systems, such as financial data, staff engagement survey outcomes, and customer satisfaction or sales data. Workforce analytics is aimed at an even more holistic personnel strategy that encompasses not only data on workers but also the work carried out by AI and robots. See https://blog.crunchrapps.com/blog/the-difference-between-hr-analytics-people-analytics-and-why-it-matters

'An HR analyst needs a kind of "Clash of Clans" dashboard that delivers sound information and helps you kick off the conversation with both the business leader and the employee' Dirk Jonker, Crunchr

Figure 2: HR analytics



Source: Rathenau Instituut

Three phases: from churning out lists and making connections to predicting
An HR dashboard can be used in several ways: to look back, to explain, and to predict. In fact, these are the three phases that an organisation goes through.

First of all, organisations can use data to look back, sometimes referred to as 'reporting' or 'metrics'. It involves 'churning out' figures on the absenteeism rate, the

male-female ratio in the workforce, any wage gaps, and so on. This process requires digital data, e.g. from a digitised personnel file. At present, many organisations have yet to organise their data management processes in a way that allows them to work directly with such tools. According to our respondents, organisations are still asking HR analytics suppliers ‘Just how many people do we actually have working for us?’. In other words, most organisations are still in the ‘metrics phase’ (Van den Heuvel and Çakir, 2019; Van den Heuvel and Freese, 2017; ABN AMRO, 2017a).

‘Looking back’ is not always that straightforward. To unearth the facts about mobility or growth opportunities within an organisation, for example, it is important to distinguish between different situations. This means ensuring data quality and applying the right definitions to label the data. Can you really call a change in job title a promotion when there’s been a reorganisation and the same job now has a different status? What does it mean when a department is renamed? Have the work and the job also changed?

Second, organisations can use data to ‘understand or explain’. For example, the HR department can examine the variables associated with absenteeism, or correlations between sickness absenteeism and leave taken. The analyses usually focus on teams or an entire organisation. The point is not why *a specific individual* is sick, but *how many people* are sick, or what the possible causes are and which measures might be effective. Understanding or explaining usually requires analysing data from different sources that are currently often stored in separate systems. For example, the results of an employee satisfaction survey, payroll records and information on leave are not stored in one and the same system. Several organisations are currently running pilots designed to analyse and combine datasets.

Those in the lead are focusing on the next phase, i.e. ‘looking ahead or predicting’ (i.e. predictive analytics), allowing them to predict and therefore anticipate sickness absenteeism or staff turnover, for example. One method is to extrapolate general trends from current data, for example ‘if 15% of our current employees are over the age of 60, we will have a major exodus of staff in a few years’. This type of information can serve as input for strategic decision-making.

In addition to extrapolation, organisations are experimenting with profiling high-risk groups. One example is to differentiate the way in which the organisation handles sickness absenteeism for different groups. Does the organisation need to take more action when an employee in a high-risk group reports sick than when another, low-risk employee does? Tracking and forecasting of this kind are already customary in other departments, such as marketing.

> *'Applying HR analytics simply means taking a "data-driven" approach, taking evidence-based decisions. Actually, we're just copying everything that marketing has been doing for the past 25 years. Except in our case, it's about employees. And the employer-employee relationship obviously differs from the consumer-business relationship. So we need to be more cautious and exercise more care.' Irma Doze, AnalitiQs*

Given the interest of organisations and the growing range of digital tools available, organisations are likely to invest, and have well-functioning data management systems in a few years as to deploy HR analytics to their best advantage.

Concerns about meaningful use

To gain meaningful information from HR analytics, organisations need to know *what* they wish to measure, and *how* they are going to measure it. 'Blind' data mining does not produce meaningful insights, but it does occur. Many organisations have trouble translating their general policy objectives into software-based models (Van den Heuvel and Freese, 2017; Van den Heuvel and Çakir, 2019).

According to our respondents, the future of HR does not lie in pure data analysis. HR professionals will always need to cast their gaze *wider* than an IT specialist or econometrician. They must constantly mediate between the employer's and the employees' best interests. Even so, HR staff are becoming data analysts *too*. In all three phases outlined above (looking back, making connections and predicting), correct data interpretation requires input by context specialists, including HR staff, managers and the workers themselves, for example because it involves knowing the difference between a correlation and a cause-and-effect relationship. A correlation between two variables does not mean that one variable influences the other. However, our respondents point out that not everyone appears to take this into account.

Another point of concern for our respondents is the way in which the tools look ahead. Some vendors claim that they can predict the future behaviour of individual employees; see, for example, an article in *The Washington Post* (McGregor, 2019). Nevertheless, no tool can make accurate predictions based on individual data. Our respondents caution organisations to beware of 'cowboys' operating in the market.

> *'There's a firm advertising that it can predict employee departures with 95% confidence. But that's just impossible. People are unique and it's not that easy to predict their behaviour. The research we carried out with Delft University of Technology shows that an accuracy of about 30% is about the*

best you can expect when predicting whether an employee will leave a company.' Dirk Jonker, Crunchr

The final question is whether analysing the entire workforce of an organisation or sector is really all that useful in everyday, practical terms. It can be difficult to apply general insights in specific situations, especially if an organisation intends to act on the outcomes.

'Suppose that by linking HR data and sales figures, an organisation establishes that salespeople aged 45 to 55 score better than other age groups. What does it mean? What can you do with this finding, as an employer? Because any employer that bases its strategic staff planning on this information will be violating discrimination law straightaway.' Piet Vessies, AWVN

2.2.2 Digital recruitment and selection

There are many different digital systems available that support the recruitment and selection of job applicants.[21] In this section, we focus on systems for assessing whether a specific candidate is the right person for the job (see Figure 3). Currently, the most popular selection methods are CV appraisals and job interviews. However, research shows that these conventional selection methods are frequently discriminatory (Rich, 2014; Bertrand and Duflo, 2016; Panteia, 2019; CPB, 2019). Even when they have the same CV, for example, candidates with a bicultural background are consistently less likely to get the job.[22] Automation promises to remove this bias.

Organising and implementing sound and effective recruitment and selection procedures is a time-consuming process, especially for companies that attract large numbers of job applicants. Companies and researchers are also discovering that the conventional selection method does not always highlight the right predictors of success.

21 For an outline of the different steps in the recruitment and selection process, see Bogen and Aaron 2018. Digital systems are available for each step. We focus on the tools that are deployed when there is an intention on both sides to enter into a relationship. Tools meant for the preliminary phase, pre-screening or attracting candidates, are excluded. For example, there are tools that scan job opening texts for language use and offer tips on how to appeal to a more diverse target group. We have also excluded onboarding tools.

22 The bias is even more evident during the first selection round (covering letter and CV) https://www.werf-en.nl/selectie-op-cv-is-echt-discriminerend/

'The traditional view that an Ivy League background makes someone a suitable candidate just isn't true. We also know that recruiters often try to size up personalities based on CVs. A candidate who plays field hockey is readily taken to be a team player, and that might convince a recruiter to invite that person for an interview. But in fact, these impressions are often wrong.' Annemarie Hiemstra, Erasmus University

Given all this, it is no wonder that organisations are looking for better ways to assess candidate suitability. In this section we discuss three new techniques: using algorithms to rate written text, automatic or semi-automatic analysis of video interviews, and assessments based on serious gaming (see Figure 3).

Figure 3: Types of digital selection tools

Source: Rathenau Instituut

CVs and cover letters

There are now various digital tools for analysing and evaluating the conventional input of the CV and the cover letter.[23] These tools make it possible to perform automatic or semi-automatic analyses. Some professions make use of simple rule-based algorithms. CVs and cover letters are scanned on hard criteria, for example a specific educational background or a driving licence. The tool performs an initial vetting using an 'if X, then Y' rule.

This technique has its limitations, however. For example, job applicants can make clever use of the way that algorithms scan documents. One easy way to fool an algorithm is to add keywords such as 'Oxford' or 'Cambridge', or even entire job descriptions or job vacancy texts, to a document in white typeface (which is invisible to the naked eye), according to various media reports (Metz, 2020; Cha, 2020; Buranyi, 2018).

Hard criteria cannot be applied in selection procedures in every profession. For example, jobs in management require communication or social skills that are difficult to assess based on a simple 'yes' or 'no' answer. That is why organisations use more advanced machine learning techniques, for example involving an algorithm that searches for other connections within a document or in large databases. One example is technology vendor CVViZ, which claims to go beyond screening key words by using artificial intelligence and natural language processing to learn from previous recruitment procedures in which candidates were hired or rejected.[24]

Unfortunately, unintended discrimination of all kinds can also creep into advanced machine learning techniques (Zuiderveen-Borgesius, 2018; Barocas and Selbst, 2016). The purpose of algorithmic decision-making is to differentiate between individuals and to separate more suitable candidates from less suitable ones. It is important to do this in an acceptable way, but that is no easy feat (see also the next section on fair selection).

> *'If you enter a thousand candidates into a system and mark the ten that were ultimately hired, the machine itself can extract the success factors. But there can be all kinds of discriminatory effects in those historical data. That poses an interesting challenge. How are you going to remove those effects? There are plenty of techniques for doing so, but none of them are perfect.'*
> *Sander Klous, KPMG*

23 Sometimes existing tools, such as questionnaires or assessments, are digitised but do not make use of the new techniques. We do not discuss these types of tools in this study.

24 See https://cvviz.com/resume-screening-guide/

The aim is to get more information from a CV and cover letter so that recruiters have a better understanding of a candidate's potential or personality traits and can put less emphasis on previous work experience. The question, however, is whether the CV and cover letter actually deliver enough input to do this and whether any connections uncovered in the data are in fact accurate and fair.

Job interviews

The ability to recognise patterns and take new data into account also plays a pivotal role in algorithms that analyse chat or video calls automatically or semi-automatically. Various tools claim that they can recognise systematic patterns, including non-verbal ones, that elude a human recruiter. When used to assess digital video interviews based on standardised questions, for example, algorithms can appraise word choice, sentence structure, intonation and facial expression and then rank the candidates on these criteria. HireVue and Seedlink supply these kinds of AI-driven tools to companies such as Unilever, Vodafone and IKEA.[25]

These techniques have limitations, however. Researchers question the validity of various tools. Are they in fact assessing what they are supposed to assess? Can you make a valid connection between facial expressions and personality and use that as a basis for predicting someone's future success? Recent meta-studies show that techniques can indeed track facial expressions but that these expressions cannot be matched to an emotion or personality (Barrett et al., 2019; Hoegen et al., 2019).[26]

Regardless of the above, what is interesting is that it is possible to change the conventional recruitment and selection procedure with its problematic history of discrimination. In the past, only a few people would receive invitations to an interview after a rigorous selection procedure. These tools make it possible to invite many more, or even all of the applicants for an interview, and they allow organisations to appraise a wider range of qualities and characteristics in their initial vetting.

Assessments

Besides new ways to extract more information from CVs, cover letters and interviews, there are even more radical changes afoot in the selection process.

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25 Seedlink does not analyse a facial expression, only the applicants' use of language, based on a twenty-minute digital interview. Companies such as L'Oréal, Accenture, Danone, Deloitte and Heineken used their services in China. Seedlink has been operating in Europe since 2017. https://www.werf-en.nl/seedlink-voorspelt-succes-aan-taalgebruik/

26 Another problem is that facial recognition technology is often trained on a limited dataset, and is therefore slow to identify people with a different skin colour (Bogen and Aaron, 2018; Buolamwini and Gebru, 2018). Note that smart software is increasingly able to generate new information in other domains, based on large amounts of digital personal data, including Facebook 'likes' that can predict sexual orientation or political preference. Even so, there is a difference between predicting traits, skills, attributes and behaviour and predicting social outcomes such as work performance and success.

What can you learn about personality traits and attributes if you begin by subjecting all applicants to a number of assessments to determine their suitability? For example, Unilever uses a combination of new online tools to assess candidate potential. It has digitised the application procedure for management trainees almost entirely. Candidates can go through the initial phases of the application process online and at their convenience.

These initial phases consist of a number of knockout questions (e.g. have you graduated?), a video interview and online games. After finishing the online process, candidates find out within a day whether they will proceed to the next round. It is only in the final phase of the procedure that the applicants come into physical contact with the organisation. Of the approximately one hundred candidates applying for a management traineeship at Unilever, six are ultimately invited to the assessment centre to have their CV reviewed for the first time (Boerman, 2017).

The online games are designed to assess the applicants' behavioural characteristics, including the ability to think quickly, problem-solving skills, logical reasoning, boldness or flexibility. For example, in a test assessing risk-taking, a candidate is told to inflate a virtual balloon. With every breath, the applicant earns five cents. If the balloon explodes, the counter is reset to zero (Boerman, 2017; AI, 2014). Shell, Achmea, ABN AMRO, Philips and ING also use gaming in their application procedures. Game vendors include Knack and Pymetrics (USA) and the Dutch job exchange platform PlayToWork, which focuses specifically on candidates with a vocational education qualification (VET). PyMetrics is developing twelve short games for Unilever, each lasting around one hour.

Fairer selection?

The tools described here provide all kinds of opportunities. New selection tools can cut costs, form part of a marketing campaign or contribute to an innovative corporate image. Above all, organisations naturally want to select the best candidates, and to do so fairly.

> *'We rule out human bias this way. And that was our main reason for doing this. As a result, we have a much more diverse workforce, in the broadest sense of the word. By that, I mean diverse in terms of educational background, cultural background, gender, and so on.' Jairi Terpstra, Unilever*

A system based on artificial intelligence (AI) can, in principle, pass fairer judgment than people can because an algorithm always measures the same thing and processes input in the same way. An AI system can therefore help ensure procedural fairness (Sánchez-Monedero et al., 2019), but organisations hope that these alternative selection methods will also promote substantive fairness, i.e. equality in outcomes for all. By kicking off the procedure with accessible games instead of asking for a cover letter, they can appeal to a wider group of candidates and lower the threshold to applying. Unilever is seeing more diversity – in terms of gender, educational background and ethnicity – in the pool of applicants who come through the procedure successfully.[27]

Still, using innovative digital tools does not automatically lead to fair outcomes and greater diversity (Hiemstra and Nevel, 2018; Cappelli, 2019), mainly due to the benchmark method that selection tools are often based on. Data on the top performers, in a certain salary grade, are used to train the algorithms. If you pick the top thirty employees in an organisation where women have long been underrepresented, then the system will be based on a discriminatory legacy. Even when developers are aware of bias in a system, it can be difficult to remove it (Hao, 2019). For example, even AI leader Amazon failed to eliminate discrimination against women from their proprietary algorithm, forcing the company to abandon its further development (Dastin, 2018).

Training data that are not representative or contain human bias lead to problems, then (Zuiderveen-Borgesius, 2018; Barocas and Selbst, 2016). A more fundamental issue is that the algorithm derives its notion of success from data concerning successful employees. Researchers question this approach (see e.g. Crawford et al., 2019; Ajunwa et al., 2016).[28]

> *'The problem – and social scientists agree – is that it's hard to identify the most successful employee. I question the way that many selection methods (based on machine learning) serve up the "ground truth"[29] [which employee is successful and why] as undisputed. That simply isn't the case.' Annemarie Hiemstra, Erasmus University*

The selection tools can thus create a digital version of the similar-to-me bias. Focusing on a certain set of skills and personal traits may make the selection more

27 The company's US figures show that workforce ethnicity has risen by 7%. https://www.nrc.nl/nieuws/2018/05/11/solliciteren-bij-een-algoritme-

28 See also US researchers' warning against charlatanism and pseudoscience (Narayanan, 2019; Harwell, 2019; Ajunwa, 2019)

29 In computer science, the term 'ground truth' refers to the validity of the training data. The 'ground truth' is the labelled basic value against which the model is trained and tested. This 'labelling' is in fact a classification, e.g. spam or non-spam (Barocas and Selbst 2016; Zuiderveen-Borgesius 2018).

diverse in terms of gender, ethnicity and educational background, but not in terms of skills and personalities. As a result, AI systems can still reproduce or even amplify the human bias and homogeneity already present in organisations (Sánchez-Monedero et al., 2019).

Wild West

In addition to the risk of discrimination, then, researchers question the notion that an algorithm delivers the best candidate. People are also posting about their experiences with digitised application procedures on social media. One striking account is by someone who has worked for an organisation for ten years and has been recognised both internally and externally as a successful employee. She scored so low on a personality test that she wouldn't have even qualified to interview for a junior position in her department.[30]

Is the algorithm ignoring too many of the factors that make someone a valuable employee? Where's the human assessment? And how does that compare to the algorithm's assessment?[31] It is worrying that various selection tools appear not to be evidence-based. Decisions concerning suitability, hiring or career opportunities can have a major impact on a person's life and there is broad agreement that such decisions should be based on valid and reliable tools.

In the Netherlands, there are various ways of assessing the quality of tests and other digital tools for this very reason. For example, the Dutch Committee on Tests and Testing (COTAN), part of the Dutch Association of Psychologists (NIP), reviews the validity and reliability of psychological tests and their predictive value. There are also accredited assessment and certification organisations that review the quality of the many online personality and intelligence tests available. However, the new digital tools are virtually unregulated. This gives 'cowboys' ample opportunity to make exaggerated claims about their effectiveness.

> *'I think recruitment and selection is a kind of Wild West. There's all sorts of things on offer and all sorts of claims being made. And, of course, there's a market for it, too.' Annemarie Hiemstra, Erasmus University*

30 https://twitter.com/TheWrongNoel/status/1194842728862892033

31 Another disturbing side effect is that a niche market has emerged for training candidates in testing and video interviews and for crafting algorithm-proof CVs. Such services may very well undermine the promise of these tools (Cha, 2020; Metz, 2020).

2.3 Managing and instructing workers

Once an organisation knows that it has the right people on board, it has to get them *doing* the right things. That calls for guidance, instruction and management, and that is the second aim of digital monitoring technology we discuss in this chapter. This is important for the worker as well. As we saw in Chapter 2, a work relationship is one in which an organisation issues instructions to the worker and checks whether they have been carried out properly. How this happens may vary from occupation to occupation.[32] Systems for managing and instructing workers appear to be prevalent mainly in certain sectors, such as retail, logistics, call centres, transport, online platforms, and manufacturing and other industry. In this section we look more closely at different types of personnel tracking systems (section 2.3.1). These are systems that collect information on workers in a variety of ways. We then look at digital systems that use these data to instruct workers in real time, known as algorithmic management (section 2.3.2).

2.3.1 Personnel tracking systems

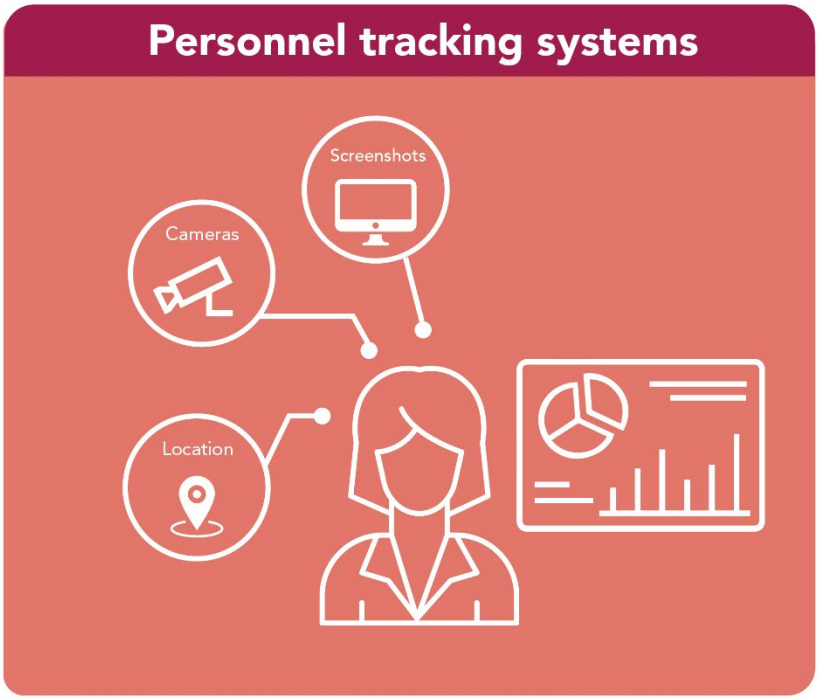
Personnel tracking systems (also known as employee monitoring software or user activity software)[33] observe (or monitor) worker presence, behaviour or performance (see Figure 4).[34] Many systems register and monitor working times and hours (the digital time clock). They are also deployed for safety and security reasons. Security cameras are installed to protect company property, for example. The heightened risk of cybersecurity attacks with insider help has triggered a need for systems that operate in the background to detect suspicious behaviour amongst employees (Accenture, 2019). Such systems will raise the alarm if large numbers of files are downloaded from the company server onto a USB stick.[35]

Employers may be required by law to monitor certain worker activities, for example to detect unlawful acts. Investment firms are obligated to record and retain certain telephone calls, emails and other electronic communications, for example as evidence of market abuse.[36] Certain financial institutions must also set up

32 And what someone thinks of it may also vary from person to person. Some will appreciate the explanation, others may consider it patronising, and yet others will feel it isn't enough.
33 https://www.pcmag.com/roundup/357211/the-best-employee-monitoring-software; https://www.marketsandmarkets.com/PressReleases/user-activity-monitoring.asp; https://www.transparencymarketresearch.com/user-activity-monitoring-solutions-market.html
34 See the wording of the Dutch Works Councils Act, Section 27(1)(1).
35 ActivTrack and InterGuard are examples of tools in which monitoring takes place in the background. https://activtrak.com/; https://www.interguardsoftware.com/
36 https://www.afm.nl/nl-nl/professionals/doelgroepen/adviseurs-bemiddelaars/bedrijfsvoering/nationaal-regime.Another example concerns hospital employees, who are not permitted to inspect every patient file

monitoring systems in order to detect suspicious orders and transactions. These systems monitor the institution's trading activities and may include data on its internal organisation, including employee information.[37]

Figure 4: Personnel tracking systems



Source: Rathenau Instituut

Personnel tracking systems may make use of a variety of data sources (Sánchez-Monedero and Dencik, 2019). First of all, they may monitor a worker's location, working hours and activities by drawing on technologies in their *surroundings*, such as security cameras, sensors and access gates. A case in point is the British news agency that wanted to install heat and motion sensors on office chairs to register the presence of workers (Waterson, 2016).[38] Second, such systems may use technologies that workers *carry around with them*, for example their smartphones (via apps), wearables, laptops or a company vehicle. The software might record

at their discretion. The Dutch Decree on Electronic Data Processing by Care Providers lays down further rules in this regard, stipulating that digital access by healthcare workers must be logged so that any unauthorised access can be tracked down later.

37 https://www.afm.nl/nl-nl/professionals/onderwerpen/marktmisbruik/meldingsplicht.

38 The journalists decided to void their objections to the system and it was never installed.

log-in and log-out times, locations and routes. Third, tracking systems may use biometric technologies that record workers' *physical attributes*, such as fingerprints or iris scans. Dutch department store HEMA, for example, had workers logging in to the cash register system with their fingerprints. They discontinued this practice on 1 January 2020 because using biometric data in this way contravenes the new personal data protection legislation (see Chapter 4) (Hofmans, 2019).

Different tracking systems also use different data analysis methods. Some systems support the assessment of workers' activities (content monitoring), such as periodic screenshots or email monitoring (Sánchez-Monedero and Dencik, 2019). Other systems extract information about performance from statistics on keystrokes, inactivity, or printer usage (meta-data monitoring) (Sánchez-Monedero and Dencik, 2019).[39] Moreover, advances in artificial intelligence make it possible to extract more information from the same data source. For example, applying deep-learning techniques to camera images may make it possible to analyse emotions or interaction patterns of workers with customers (Sánchez-Monedero and Dencik, 2019; Levy and Barocas, 2018). Incidentally, we have already seen that recognising emotions or patterns is not the same as extrapolating valid connections.

One important technical note regarding claims of more effective monitoring is that large amounts of data are not enough. Once you start tracking, you also have to interpret the outcomes and establish decision criteria and intervention guidelines. What is 'inactivity'? Which search commands set off alarm bells? What conclusions can you draw from factual data on keystrokes? (See also section 2.2.1.)

2.3.2 Algorithmic management

In this section we examine systems that instruct workers automatically (see Figure 5 on the next page). They go a step beyond personnel tracking. Algorithms make it possible to plan and instruct workers and to assess their performance remotely and in real time (Lee et al., 2015). This is referred to as algorithmic management and it has been developed mainly by companies in the platform economy, e.g. to instruct bike couriers or warehouse employees.

39 The extent to which this type of monitoring takes place is unknown. In a 2018 survey, the British Trades Union Congress asked employees which forms of monitoring they were seeing most often. Nearly 50% of the respondents said that it was likely or very likely that their emails, files and browsing history were being monitored in the workplace, about 26% thought it likely that their organisation would use software to log their keystrokes, and about 24% that their organisations would use handheld or wearable location trackers (Trades Union Congress 2018).

These models typically display the following features (Mateescu and Nguyen, 2019b):

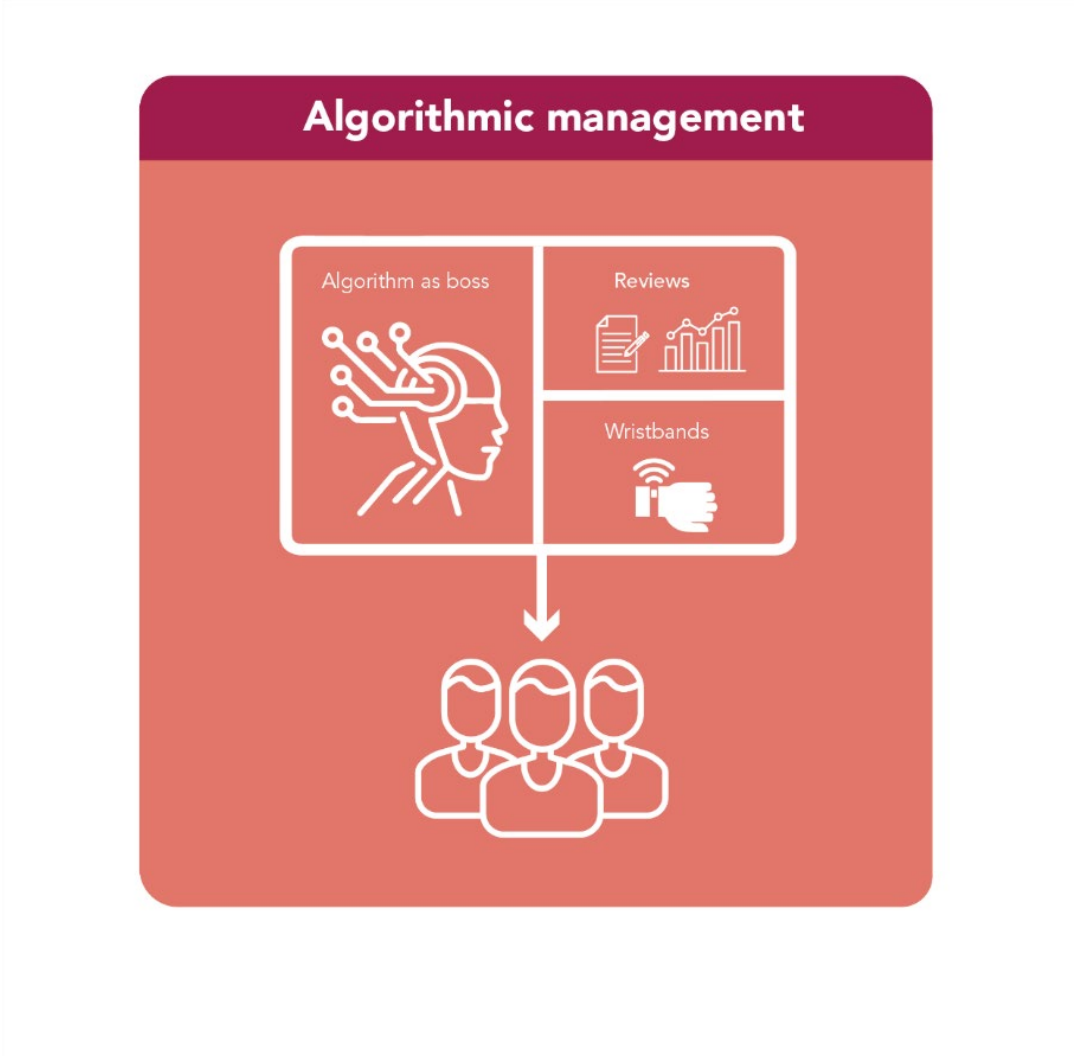
1. Prolific data collection and surveillance of workers through technology;
2. Real-time responsiveness to data that informs management decisions;
3. Automated or semi-automated decision-making;
4. Transfer of performance evaluations to rating systems or other metrics;
5. The use of "nudges[40]" and penalties to indirectly incentivize workers' behaviour.

The Uber app, for example, tells drivers which passengers to pick up, where to take them, what to charge and what route to take. If the average customer rating is below a certain score, the driver is barred from working for the platform. Algorithms mediate the drivers' entire work experience. Flesh-and-blood supervisors rarely intervene. Uber tempts drivers to stay on the road by nudging them, for example by telling them how much more they need to earn to match yesterday's take, or by planning their next pickup before they have finished their current one.[41]

40 A nudge is a gentle push in the right direction. It is used in behaviour modification therapy (Sunstein & Thaler, 2009) and represents a form of persuasive technology whereby users are induced to make 'good' choices. The 'guru' of persuasive technology, B.J. Fogg (2002), defines it as an interactive information technology designed to change users' attitudes or behaviour.

41 https://medium.com/@canvas8/uber-nudges-brand-behavioural-economics-insights-67f6f6494275; https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html;Other companies are also using nudges. Cogito offers call centre employees real-time feedback on their calls based on an analysis of their intonation, word choice, word frequency and so on. An employee might be told to talk more slowly or more quickly, to stop talking, or to sound more sympathetic (a pink heart appears on screen: 'Empathy cue: think about how the customer is feeling. Try to relate') (Mateescu and Nguyen, 2019a).

Figure 5: Algorithmic management



Source: Rathenau Instituut

By now, some elements of algorithmic management appear to be migrating to other sectors as well, such as hospitality and healthcare (Mateescu and Nguyen, 2019b). Organisations are using apps to tell workers how much time they are allowed to spend on a specific task, when they can take a break and for how long, and what route they need to take to get from A to B. Warehouses use gaming techniques to boost performance and scoreboards to show who works fastest. Other techniques include the haptic wristbands worn by Amazon warehouse workers or the exoskeletons (portable ergonomic support) used by Heineken warehouse workers.[42] The wristband vibrates to point an employee in 'the right direction', but it

42 The device records egonomic data. According to Bloomberg, Heineken NV is one of StrongArm Technologies' clients. https://www.bloomberg.com/news/articles/2019-11-05/am-i-being-tracked-at-work-

also identifies the workers who are ‘wasting time fidgeting’ and tells managers how often they use the toilet (Solon, 2018). StrongArm Technologies’ devices, for example, monitor employee movements and buzz whenever they perform high-risk motions.

Here too, there are technical obstacles and it is important to be aware of what algorithms *cannot* do. The technologies can make remote, timely intervention possible when problems arise, but as yet, algorithms have only a limited capacity to take specific circumstances into account. As a result, algorithmic instructions do not always turn out to be accurate on the ground. For example, journalist Jeroen van Bergeijk (2018) reported on his time as an Uber driver. Once, when he was taking a customer to a railway station, the app told him he had arrived at his destination while he was still driving down the motorway. That’s because the station was located below ground, underneath the motorway. A postal worker told *De Groene Amsterdammer* that she was unable to follow the route prescribed by her employer’s app because she couldn’t squeeze her bicycle and stuffed postal bags through a narrow alleyway (Kuijfman et al., 2018).

2.4 Support and development of workers

The third reason organisations use digital systems is to support and encourage workers to get the best out of themselves, on the understanding that ‘happy workers are productive workers’. In doing so, organisations consider their workers’ health, lifestyle and job satisfaction. Digital systems offer customised professional development programmes, facilitate feedback and personal growth, or focus on improving the workplace atmosphere and team spirit. They support long-term employability or prevent high staff turnover. They appear to focus specifically on high-skilled knowledge workers. In the following sections, we zoom in on digital tools for fitness and work-life balance (2.4.1), engagement tracking (2.4.2) and skills development (2.4.3).

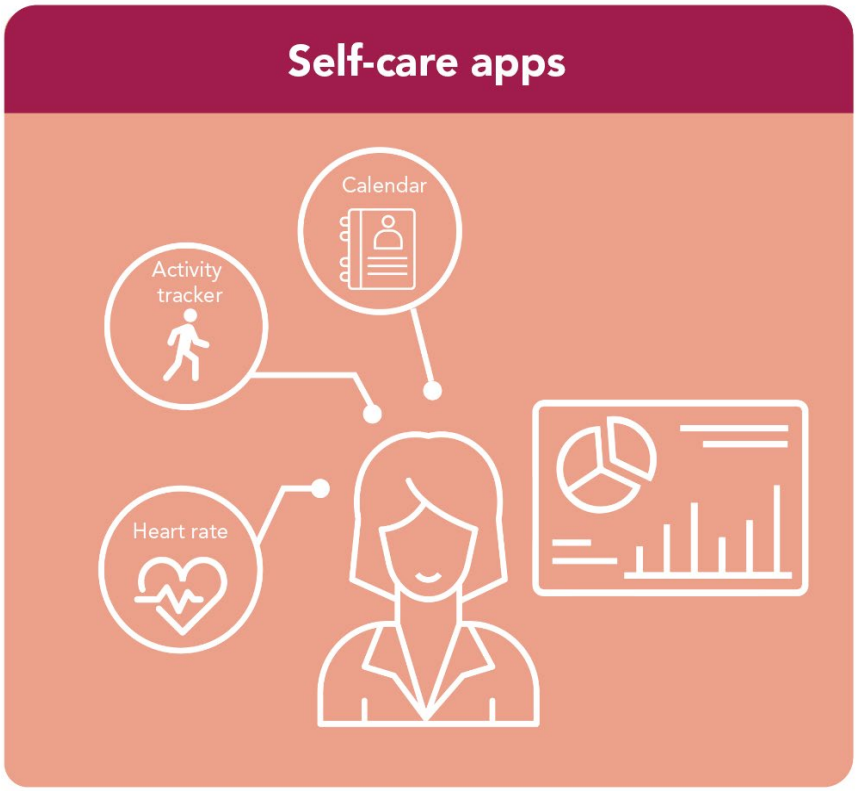
2.4.1 Self-care apps

Recent years have seen a rise in the number of workers experiencing stress-related complaints and suffering from burnout. In 2018, nearly 1.3 million Dutch

plenty-of-warehouse-workers-are; see also https://www.businessinsider.nl/warehouses-make-workers-wear-biometric-harnesses-that-track-movements-2019-11/

employees[43] had symptoms of this kind (TNO, 2019), feeding a growing demand for stress management support among both workers and organisations.[44] There are now various tools that encourage individuals to live a healthy lifestyle and adopt a good work-life balance (Manokha, 2019; Adler-Bell and Miller, 2018) (see Figure 6).

Figure 6: Self-care apps



Source: Rathenau Instituut

Some of these apps track physical factors. One example is the fitness tracker, which records wearers' physical activity, how many steps they take and stairs they

43 These are employees who take part in the annual Netherlands Working Conditions Survey. Another survey, the Netherlands Survey of the Self-Employed, tracks working conditions among independent contractors.

44 A survey conducted by the National Institute for Public Health and the Environment (RIVM) among more than 3100 employers active in a variety of sectors in the Netherlands shows that eight out of ten cite employee health as the most important indicator of a successful business. https://www.rivm.nl/nieuws/vier-op-tien-bedrijven-investeren-in-mentale-gezondheid-van-werknemers

climb, as well as their heart rate, blood pressure or sleep patterns. In many cases, the data can be reviewed online. Some services work with algorithms to detect possible connections between the different outcomes. Programmes can also be set to provide users with tips and notifications (Niezen et al., 2018; Kool et al., 2014).[45]

These services can help individuals analyse their lifestyle, but they can also do the same for groups and entire organisations. Gaming techniques encourage workers to get more physical activity, for example by challenging departments to be the first to climb a virtual Kilimanjaro. Data analysis can provide information about workload that an organisation can use as a basis for job redesign.

Organisations in the United States are especially active in promoting corporate wellness and health programmes tied to wearables (Manokha, 2019; Adler-Bell and Miller, 2018; Mateescu and Nguyen, 2019a).[46] Dutch insurer a.s.r. announced that it would issue discount vouchers to workers who used a fitness tracker and accompanying app when exercising.[47] The Swedish lorry manufacturer Scania AB has gone one step further. It developed '24-hour employee' policies encouraging workers to adopt a healthy lifestyle and work on their personal development on and off the job so that they remain in 'workable condition' (Manokha, 2019).[48]

There are also systems that provide feedback based on meta-data taken from email exchanges, calendar entries and Skype and chat conversations. One example is Microsoft's MyAnalytics service, which uses such data to track work patterns and provide feedback, for example on an employee who is constantly making evening business calls or answering emails on weekends. In the Netherlands, Rabobank set up a pilot involving this system in the past year. Its aim is to allow employees to make more conscious choices. Rabobank managers are not allowed access to their employees' MyAnalytics data.

> *'Say you send out an email after 6 p.m. for the third day in a row. The system will ask you "How's your work-life balance these days?" Or say you have a habit of going to meetings with another colleague. The system will say "Are you aware that you're doing this? Wouldn't it be better if only one of you attends?"' Marc Jansen, Rabobank*

45 See for example https://www.selfcare4me.com/wat-wil-je-meten-met-behulp-van-parameters/ en markt https://www.smarthealth.nl/2015/11/05/het-wordt-druk-op-de-markt-van-digital-corporate-wellness/

46 Approximately half to two-thirds of US employers offer wellness programmes (Pitt-Catsouphes et al., 2015).

47 https://tweakers.net/nieuws/159428/verzekeraar-a-punt-sr-biedt-korting-en-cadeaubonnen-aan-klanten-die-wearable-dragen.html

48 https://www.scania.com/group/en/wellbeing-and-safety-at-the-core/

Effective nudge or behavioural change
Knowing more doesn't always lead to better decision-making. We all know that we should eat healthy and exercise regularly and that it might be better not to answer work emails just before bedtime – but we don't always act accordingly. Research shows that there is, as yet, no evidence that digital feedback is effective, certainly in the long term (Kool et al., 2014). It depends on the user's attitude and can vary per segment of the employee population.

Another technical obstacle concerns standardisation. Not everyone will benefit from taking ten thousand steps a day, and some people have less trouble working evenings than others.

In some cases, individuals receive direct feedback from a system, while in others the scores are only shared across teams or departments with the information being used to link factors such as lifestyle, health and absenteeism. These links can then serve as a basis for altering absenteeism or leave schemes or for setting up wellness programmes. Note that even when the feedback data is aggregated, the information is collected from individuals. It is impossible for many users to grasp who has access to their data or who will be able to use it in the future.[49]

Moreover, when organisations outsource their technology development needs to an external supplier, a third party comes into play. Intimate data collected by self-care apps can be a lucrative business. All kinds of special interests may be involved that influence the design of digital tools and systems.

2.4.2 Engagement

Many organisations conduct surveys to monitor employee engagement and satisfaction every year or more often. Now there is a new generation of digital systems that claim to examine this in real time (see Figure 7). Following in the footsteps of marketing divisions, which use digital systems to track customer needs and requirements, HR departments are moving away from questionnaires and using digital monitoring tools instead. Some Dutch companies are already experimenting with such tools.

> *'There are still plenty of conventional methods, such as a detailed annual employee satisfaction survey. But companies are also looking at other*

49 Example of the risks associated with using datasets in a work context (more precisely: potential candidates). https://news.sky.com/story/job-applicants-worried-as-hundreds-of-thousands-of-cvs-exposed-online-11836935

indicators, such as the emotions expressed in emails or WhatsApp messages. This is still its infancy, but I'm seeing some transitional trends, things like employee pulse surveys.'[50] *Charissa Freese, Tilburg University*

The Rotterdam-based company KeenCorp offers software that scans worker emails to analyse the degree of engagement and to calculate team 'engagement scores' (using an 'attitude heatmap'). KeenCorp states on their website that the software can be used for the early detection of fraud. The software can also help in analysing the degree of diversity and inclusion in an organisation, as well as talent development.[51] VWE Automotive is one of the few companies in the Netherlands that the technology vendor has as a customer.

Figure 7: Apps that measure employee engagement

Source: Rathenau Instituut

50 Employee pulse surveys are short, easily adaptable online questionnaires conducted at frequent intervals to analyse employee satisfaction or sentiment within an organisation or specific department or team.

51 https://keencorp.com/why-keencorp

Another example is the US-based company Humanyze, which collects information using noise sensors, email, calendars, and chat and Skype exchanges.[52] It analyses interaction patterns between employees, for example to gauge the effect of engagement programmes. Another application helps organisations redesign office layout, for example to encourage more interaction between employees.

This type of tool once again raises questions about validity. How can we measure such concepts as engagement, enthusiasm or collaboration? Pride, enthusiasm and satisfaction are sometimes mentioned in the same breath, as if they were interchangeable concepts. But can we in fact measure them? And is there truly a connection between a person's choice of words and their level of enthusiasm? Proving that is the case is turning out to be difficult for many organisations (Van den Heuvel and Freese, 2017). For example, criticism has been levelled at the representativeness of the datasets used and whether the analyses in fact produce valid connections (Ledowski, 2017).

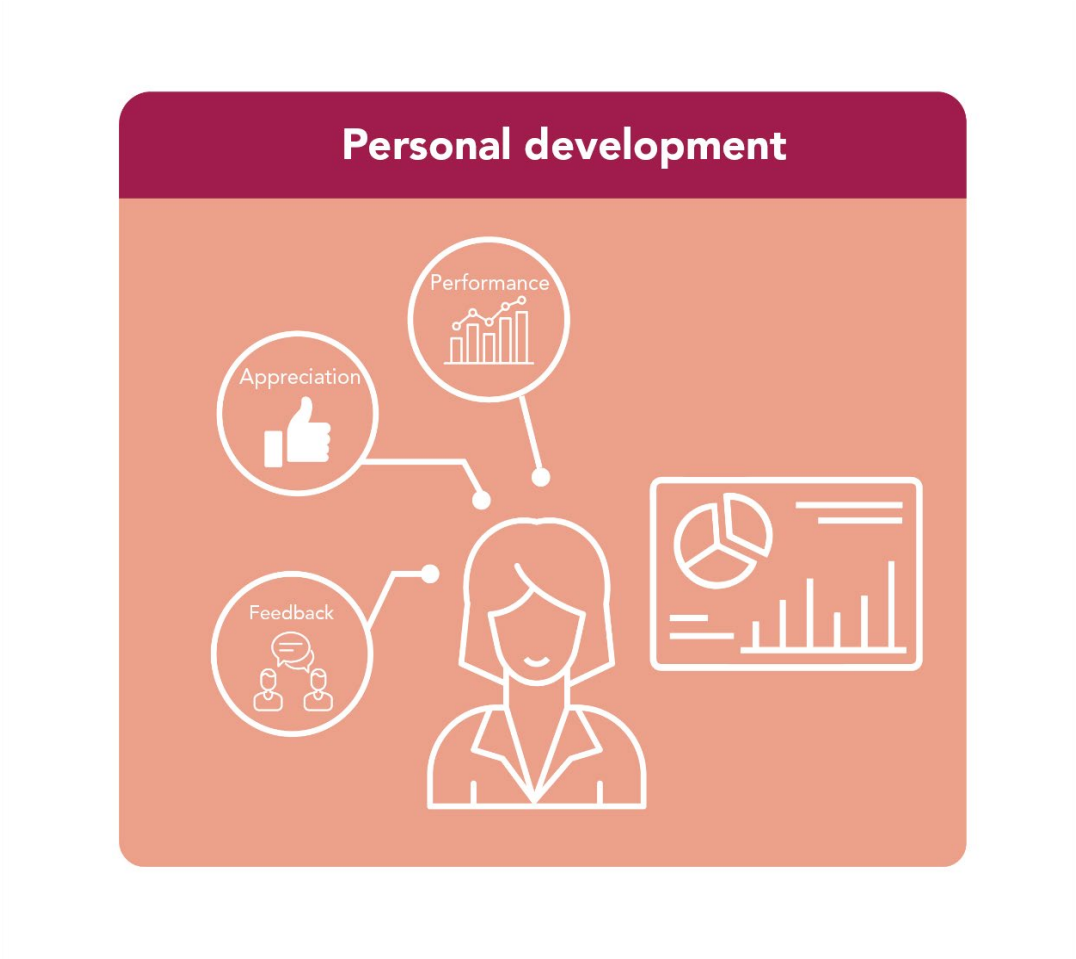
2.4.3 Personal development and encouragement

In this section, we look at digital systems that furnish feedback on performance and skills, thereby promoting personal development (see Figure 8).

One Dutch 'feedback provider' is TruQu, a software system that makes it easier for employees to keep track of their personal development. The app gives workers an easy way to ask colleagues, customers or supervisors for feedback. TruQu not only works for various companies but also delivers systems to Fontys University of Applied Sciences, which uses the software to stimulate students' learning and development.[53]

52 https://www.humanyze.com/
53 https://truqu.com/business-case-fontys/

Figure 8: Apps for personal development



Source: Rathenau Instituut

Rabobank uses a variety of digital tools to support employee growth and personal development, and also develops its own software systems. For instance, the 'Feedback App' trains employees in the skills that Rabobank considers important for them to master.[54] The GROW! system has replaced the existing performance management cycle and focuses more on employee growth and development. Employees can, for example, request feedback from colleagues, supervisors, customers and clients throughout the year.[55] The bank is also experimenting with the Furhat social robot, for example to allow employees to practise delivering 'bad

54 These include problem-solving ability, collaboration and emotional intelligence.
55 https://www.xperthractueel.nl/beoordelen/beoordelingsgesprekken-zorgen-niet-dat-medewerkers-beter-presteren/A 2018 survey of the bank's managing directors and employees revealed that both groups needed to learn how to use the system more effectively; http://www.helemaalvandezetijd.nl/uncategorized/grow-het-hele-verhaal/

news'.[56] The idea is that feedback can improve the learning process and mutual relationships.[57]

To ensure that feedback is effective, it should not be linked in any manner to job performance appraisals. The dividing line is very fine in some tools, however.[58] The Furhat robot has been deliberately designed to prevent data from being shared or used during performance appraisals.

> *'Some apps let you ask people for feedback on specific points, for example after a presentation. That's very useful because you can use it to support your personal development. But these apps an also be used for appraisals. The difference between development and appraisal is crucial. If the app is used for appraisal, then you start thinking strategically.' Charissa Freese, Tilburg University*

Some companies go a step further in supporting personal development. For example, the Dutch company BrainCompass will analyse employees' DNA to give them a better understanding of their personal and biological profile so that they can build on their natural talents.[59] The company website states that it has carried out DNA analyses for approximately 1,500 workers and that it has worked for such companies as KPN, KPMG, ASR, PGGM, Delta Lloyd and Royal HaskoningDHV.

BrainCompass claims to underpin its DNA analysis with international and proprietary genetics research. Researchers question these claims, and they have voiced their criticisms in the media. 'If you dig down and look at the number of people they've analysed in their studies, you see that these are small groups,' says Professor Manfred Kayser, head of genetic identification at Erasmus Medical Centre, in Dutch national newspaper *NRC* (Van Lonkhuyzen, 2018). Dorret Boomsma, professor of biological psychology at the VU University Amsterdam, says in the same article that there is indeed growing evidence of a genetic predisposition to behaviour, 'But it's impossible to diagnose personality traits by analysing five genes. Behaviour can involve hundreds or even thousands of genes' (Van Lonkhuyzen, 2018).

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56 The robot can be programmed in different ways, for example to imitate a 'difficult customer' who is easily irritated. https://www.nrc.nl/nieuws/2018/11/14/dit-is-furhat-uw-hulp-bij-slechtnieuwsgesprekken-a2755231

57 We still know very little about how this operates and what people think of it.

58 A US company such as BetterWorks, for example, delivers software that keeps track of targets (performance), feedback and development. Both employees and managers can view progress on targets continuously, and both can offer feedback and encouragement towards achieving the targets.

59 https://www.braincompass.com/

2.5 Conclusion

As we stated in Chapter 1, monitoring is part of working life. The present chapter has shown that the nature of monitoring – i.e. tracking, analysing and providing feedback – has changed over time.

For *tracking* purposes, organisations are using more data and other types of data that encroach on life beyond working hours or the workplace. As a result, monitoring is no longer limited to what the supervisor can see or based on typical HR data (such as employment record, amount of leave taken, and so on). Organisations can now track intimate data, including facial expressions, word choice and DNA, more continuously and on an individual basis. The purpose of monitoring is also broader than it used to be. In addition to assessing performance and measuring productivity, monitoring now also focuses on such issues as suitability, future success, wellbeing and commitment.

For *analysis* purposes, organisations today are employing increasingly sophisticated technology. They seek to combine data extracted from different sources and generate new insights using algorithms and artificial intelligence. The algorithms occasionally arrive at outcomes using data that workers have not shared voluntarily and possibly do not even know about themselves. Organisations can also monitor workers indirectly by tapping into different data sources. They can, for example, track how they move, how they interact with customers, and whether these interactions are leading to better sales figures.

Technology makes it possible *give feedback* in new and subtle ways. For example, organisations are now using gaming techniques and nudges. Feedback is also provided at different levels; in some cases, individuals receive notifications or personalised instructions, in other cases individuals, teams and supervisors are able to inspect anonymised data concerning their team or department, and in yet other cases feedback takes the form of data visualisations or aggregated analysis intended for the boardroom.

The final change is that monitoring is no longer limited exclusively to the interaction between the organisation and the worker. The technology may be in the hands of a third party, i.e. a technology vendor. It is not always clear, either for the workers or their organisation, which data are being collected, what is being done with them and who will perform the analyses going forward.

Both the popular media and technology vendors make major claims about the effectiveness of these new tools. They clearly satisfy a need and can create

opportunities, for example to reduce discrimination in recruitment and planning, to provide clearer instructions and better appraisals, and to improve job satisfaction.

This chapter, however, has revealed a number of reservations about these claims. For example, there is as yet little hard evidence that some of these tools are valid and reliable, and our respondents have warned about 'cowboys' operating in the market. It is crucial to be realistic about the predictive value of data or the correlations that have been found. A correlation (e.g. the best-performing employees have certain traits) does not imply causation (*ergo*, these people are successful because they possess these traits), and yet some vendors give the impression that it is. Organisations must also be more realistic about what the technology can and cannot attain. Even with new technology, interpreting data, preventing discrimination or defining success are all complex challenges. These tools are not a quick fix. Organisations will not only need to make adjustments, for example upgrading their data management systems, but also to build the expertise and skill needed to assess data analyses properly.

Our analysis shows that, despite the growing market, digital monitoring tools are not yet being deployed on a massive scale in the Netherlands. There are furthermore relevant differences between technologies, their objectives, and the 'level' at which they give feedback. An HR analysis system that looks back at patterns of sickness absenteeism differs in nature from a system that monitors worker performance and from a system that predicts someone's suitability for a job. Meanwhile, we are likely to see the emergence of more integrated systems.[60] Before widespread use of such technologies commences, however, it is crucial to know more about what it means to track, analyse and give feedback to workers in various ways. Chapter 3 consequently looks at the impact of new monitoring technologies on job quality.

60 According to Wonderkind's product developer, the biggest shortcoming is that companies use each tool separately. HR policy would improve vastly if the tools were linked. R. Winkel, 'Kunstmatige intelligentie bij werving staat nog aan begin'. In: *Financieele Dagblad*, 30 September 2019

3 Job quality

3.1 Introduction

In Chapter 2, we discussed the growing market of digital systems for tracking, analysing and providing feedback to workers. We saw that the tools differ in the data they collect, in the techniques they use and in the way they provide feedback. In this chapter, we look at what the expanded monitoring capabilities mean for workers. We do this by applying the notion of 'job quality'. It is a concept with many dimensions and a long history, so we start this chapter with a brief explanation (section 3.2) in which we highlight its key dimensions: earnings quality, labour market security and quality of the working environment. We then look at the impact of digital monitoring tools on each of these dimensions based on desk research and our interviews (section 3.3) and show how that impact extends beyond these three dimensions (section 3.4).

3.2 The concept of 'job quality'

Job quality is a complex concept that is examined in various academic disciplines, including philosophy, psychology, sociology and economics. In Chapter 1 we saw the historical quest to strike a balance between an organisation's best interests and the wellbeing of its workers. Initially, the focus was on physical working conditions (hygiene, safety), pay and working hours. Later, the emphasis shifted to such aspects as mental strain, workload and personal development (Mok, 1990; Heming, 1992).[61] Job quality is therefore related to both material and immaterial factors, but also to the subjective perception of job satisfaction.[62]

There are various models and theories about job quality (see for example Munoz de Bastillo, 2009), but most of them involve the following four recurring elements (see for instance Mug, 1990; Witte & Ruysseveldt, 2004):

- Job content: variety, meaningful work, degree of autonomy
- Working conditions: working times, pace, safety

61 Some of these aspects were enshrined in law in the 1980s. An example is the Dutch Working Conditions Act (*Arbeidsomstandighedenwet* or *Arbowet*), which focuses on risks to health and safety arising from the physical conditions of work, mental strain or the absence of learning opportunities (Heming, 1992).

62 The development of various national and international quality of life indices makes it possible to study correlations between economic factors, social and institutional factors, and self-reported well-being (Brey, 2012). It is beyond the remit of our study to examine the theoretical and empirical research on this subject. We have therefore confined ourselves to a concise summary of key tendencies in the thinking about job quality and then explain how we apply this concept in the present report.

- Employment terms: earnings, fringe benefits
- Workplace relations: relationships with colleagues and managers, consultation practices

These four elements have been fleshed out in more detail over the past twenty years (from 2000). For example, they now encompass job and income insecurity, partly in response to globalisation, automation and non-standard forms of employment. Issues such as contract duration, number of working hours and work scheduling are now mentioned as separate dimensions in thinking about job quality (ILO, 2012; Eurofound, 2012; OECD, 2016; Gallie, 2007; Kalleberg, 2011; Clark et al., 2018). The financial crisis, and notions of economic growth and prosperity beyond 'gross national product' alone have also spurred new approaches to quality of employment and quality of life in recent years (Stiglitz et al., 2009[63]; OECD, 2016).

Job quality has become more a prominent component of European and national policy agendas since 2000, for example in the European Employment Strategy (2001) and the Lisbon Strategy (2010). In practice, however, the focus in policymaking and the indicators tracking progress on policy continue to stress job quantity. That is due not only to the global financial crisis but also to the absence of an unambiguous framework for measuring and comparing job quality internationally (OECD, 2016).

Since 2000, various European and international organisations have published their own frameworks and indicators, each based on slightly different aspects of job quality (for an overview, see e.g. Munoz de Bustillo et al., 2009). The International Labour Organisation (ILO), the European Foundation for the Improvement of Living and Working Conditions (Eurofound), the European Trade Union Institute (ETUI) and the United Nations Economic Commission for Europe (UNECE) have each published their own frameworks and indicators. Several EU Member States are also developing models for measuring job quality at national level (see box 1).[64]

63 See, among others, the influential report co-authored by Joseph Stiglitz (Nobel laureate in Economics) at the request of the French government. It was echoed in the OECD Better Life Initiative in 2011 and its jobs quality framework.

64 In the Netherlands, for example, Statistics Netherlands and TNO have carried out the Netherlands Working Conditions Survey every year since 2005 at the request of the Ministry of Social Affairs and Employment, https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/nationale-enquete-arbeidsomstandigheden--nea--

Box 1: Organisations evaluate job quality based on differing dimensions

Eurofound (2012)
1) Earnings
2) Prospects (job security, career progression, contract quality)
3) Working time quality (duration, pressure, emotional/value conflict demands)
4) Intrinsic job quality (skills, physical and social environment, work intensity)

ILO (2013)
1) Employment opportunities
2) Adequate earnings and productive work
3) Decent working time
4) Combining work, family and personal life
5) Work that should be abolished (child labour, forced labour)
6) Stability and security of work
7) Equal opportunity and treatment in employment
8) Safe work environment
9) Social security
10) Social dialogue, workers' and employers' representation

OECD (2016)
1) Earnings quality
2) Labour market security
3) Quality of the working environment (time pressure, physical environment, work autonomy, skills, workplace relationships, working time)

Both the public and policymakers in the Netherlands have recently become more focused on job quality. For example, the Scientific Council for Government Policy (WRR) published a report (*The better work: society's new mission*, 2020) calling for better work for all to be regarded as an important societal challenge, and the government-installed Committee for the Regulation of Work (Borstlap, 2020) examined the growing incidence of non-standard forms of employment and how work should be regulated in the future.

The many different models published in recent years are not merely a manifestation of the multidimensional nature of the concept of job quality. They also show that the concept is situated at the crossroads of research, politics and ethics (Vendramin and Parent-Thirion, 2019). The ILO's concept of 'decent work' is based on a vision of social justice and human dignity that implies a certain moral judgement of work.

In the context of the EU, the the more neutral 'job quality' is more common. There are those who criticise the use of the term 'job quality' because it distances the concept from social issues and moves it in the direction of best practices rather than a discussion of workers' rights (Vendramin, et al. 2014).[65]

In 2014, the OECD developed a model for a more unequivocal assessment of job quality based on three dimensions: earnings quality, labour market security, and quality of the working environment (OECD, 2014). The model thus focuses on 'objective' dimensions, i.e. dimensions that can be observed by a third party, rather than subjective opinions about perceived job quality. One person may find precise instructions oppressive, whereas another may regard them as welcome guidance. It is difficult to base policy on these kinds of individual opinions.[66] At the same time, however, the OECD model does focus on the *individual* rather than on national indicators.[67]

We base our analysis on the OECD framework but also take a broad view of the possible societal and ethical factors that can impact job quality.

Earnings quality

It will come as no surprise that studies show that adequate earnings contribute to job quality and to individual well-being.[68] The OECD therefore looks at average individual earnings. It also considers the distribution of earnings across the labour force, because research shows that quality of life improves if earnings are more equally distributed in a population (OECD, 2016).

Labour market security

A debate has arisen in recent years about the detrimental effects of non-standard employment, which is becoming increasingly common. Workers on non-standard contracts enjoy less protection under the law than salaried workers, have less access to social security and training programmes, and are less likely to be

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65 The concept of 'sustainable work' has recently emerged as a possible alternative to 'decent work' and 'job quality'; see Vendramin, Prieto, C.R. and A. Serrano Pascual (2014). This is particularly relevant in the context of an ageing labour force.

66 Some dimensions of the OECD's model can only be measured by means of self-assessments, so the model does include subjective measures. However, the OECD does not include subjective opinions about job satisfaction, as this depends in part on individual preferences (one person may experience restrictions on autonomy as oppressive, whereas another may consider it welcome guidance).

67 Such as gross national income or existing health and safety legislation. Such indicators are particularly interesting for understanding and identifying areas for improvement in countries with a low gross national income and weak health and safety laws. These indicators are less important for the purposes of our study.

68 Although it appears that increased material wealth does not always mean greater happiness (quality of *life*). For example, the Easterlin paradox stresses that happiness does not trend upward as a country's income continues to grow. Earnings have a weak correlation with emotional well-being but a fairly strong correlation with life satisfaction (Easterlin, 1974).

unionised and to engage in collective bargaining (OECD, 2019). In the Netherlands, the number of people working under temporary employment contracts is growing and has reached a ratio of almost one out of five workers (OECD, 2019).[69] The report by the Borstlap Committee indicates that there are major differences in the Netherlands between those who are prosperous, well-educated and whose jobs offer adequate social protection and those who are poorly educated, earn little and work in jobs that offer little social protection.[70]

Job security is an important determinant of individual well-being (see, e.g., Green, 2009; OECD, 2016) and is therefore included in the OECD model.[71] The OECD also considers the risk of unemployment, the expected duration of unemployment and the degree of protection that collective insurance schemes afford against such risks.

Quality of the working environment

The non-economic aspects of employment can also impact job quality. The OECD looks at 'job demands', such as time pressure or physical health risks, and at 'job resources', such as work autonomy, learning opportunities, workplace relationships, working time, and work-life balance.

An accumulation of job demands has a negative impact on workers' health. Job resources can help to mitigate this negative impact. High-pressure jobs are easier to bear when workers can set their own hours and choose the methods and order of tasks themselves. The OECD therefore uses 'job strain' as a measure, i.e. the degree to which workers face more job demands than the number of job resources they have at their disposal. Workers who have enough job resources to handle interesting job demands are generally healthier, more satisfied and more productive (OECD, 2014). A good working environment allows people to fulfil their ambitions and to feel useful in society. In recent years, workers have been facing greater work intensity and, consequently, more job strain (WRR, 2020).

69 These figures make the Netherlands an outlier among similar neighbouring countries. This is rooted in national policy, and not just in such trends as globalisation and digitalisation, which are occurring everywhere (Commissie Regulering van Werk, 2019; 2020; OECD, 2019). Policy measures are not the only reason for this trend, but they do 'make a significant contribution,' according to the Committee (Commissie Regulering van Werk, 2019).

70 The Committee says of this group: 'If they lose their jobs, they run the risk of being sidelined for a long time. The current rules exclude rather than include them. It is no exaggeration to describe this as another "great social question."'

71 'Job insecurity may affect firms' profits by reducing worker retention rates, investment in firm-specific skills and productivity, as well as society at large by shaping people's political views, increasing social unrest, sapping consumer confidence and saving behaviour' (OECD, 2014).

3.3 Digital monitoring and job quality

Organisations can choose how they implement and use digital systems, for example by monitoring individuals, or by monitoring at group level or organisation-wide. Their choices affect how workers perceive these tools. In this section, we discuss various potential consequences of their choices for the three dimensions relevant to job quality.

3.3.1 Earnings quality

At the start of Chapter 2, we discussed three types of digital monitoring tools. The deployment of tools for *managing and instructing* workers has the most direct relationship to earnings quality. These are the systems that we focus on in this section. The relationship to earnings quality is less obvious for the other systems. HR analysis systems can, for example, reveal pay differences between groups in an organisation or indicate when employees are generally promoted. Systems that provide digital feedback can also, potentially, replace personal feedback by managers, thus influencing workplace relations. Systems aimed at development and support are often not meant to be used for appraisal purposes, but they can in fact play a role in appraisals, for example if a team or individual is underperforming and management has access to the relevant data.

Time tracking: wage theft

Organisations have been registering employee working hours and presence for a long time, for example by requiring them to 'punch in' to a time clock. Such time registration systems allow the organisation to determine how much it should be paying employees. Nowadays, digital systems, such as biometric systems or smartphone apps, are the modern version of the time clock. These systems are sometimes abused, however, both by workers and by the organisation.[72] For example, organisations require workers to be present but do not allow them to 'clock in' until the shop or restaurant gets busy (Rosenblatt et al., 2014; Mateescu and Nguyen, 2019a).[73] Organisations may also round down the time worked, or have the system automatically deduct breaks, regardless of whether employees have taken them (Tippett et al., 2018), depriving workers of a considerable share of

72 Workers can ask co-workers to clock in for them if they are late, so that they get paid for the time anyway (this is called time theft). Newer systems are meant to prevent such abuse, with workers using biometrics or smartphone apps to log in.

73 The US retail chain Walmart has been held responsible for millions of dollars in wage theft (Staffing Industry Analysts, 2014). In 2014, McDonald's employees sued the company for wage theft (Rosenblatt et al., 2014; Levy, 2015).

their earnings.[74] This kind of abuse is known as wage theft. Monitoring technology sometimes helps workers to expose such abuses (Rosenblatt et al., 2014).

Appraisal and pay

The systems also deliver information for appraising worker performance, for example, by comparing someone's work pace with the average pace and then selecting a target for the preferred pace. A British warehouse did this using wearables.[75] The devices produced data that management appeared to be using to decide whose contract would or would not be renewed (Moore et al., 2018). Appraisals may be linked directly to pay, for example in the case of customer reviews. This is often the case for gig platforms, but also for other organisations, such as retail or catering firms (Mateescu and Nguyen, 2019b; Rosenblatt et al., 2014).[76] Drivers who work through Uber and Lyft can only earn more at peak times if they are highly rated, and drivers with a low customer rating may no longer welcome on the platforms. A report by online news site BuzzFeed revealed that customer ratings influenced how many shifts waitstaff were scheduled to work in an American restaurant chain (O'Donovan, 2018).[77]

Stress and confusion

Other organisations choose to not directly link appraisal to payment. Dutch food delivery service Deliveroo says that it does not penalise its bike couriers for refusing jobs. Even if couriers register for a session and then opt out at the last minute, do not come online or go offline again after a few minutes, the organisation says that such behaviour does not impact the number or type of deliveries they are offered.

> *'Courier behaviour doesn't have any consequences going forward. They can refuse as many deliveries as they want. They have complete freedom. Couriers themselves decide whether or not to work. But that's also true of other matters, such as how they interact with customers or restaurants, what they look like, how they cycle – none of it matters.' Elvira Bos, Deliveroo*

74 A study found that the default settings of 13 commonly used time registration systems in the US automatically rounded down working time and and deducted break times (Tippet et al., 2018).

75 Wearables are smart electronic devices that can be incorporated into clothing or worn as accessories.

76 For example, high-end Dutch department store de Bijenkorf made the news after staff complained about an online feedback form. The form was not linked to employee appraisals, but it did contain a field in which customers could enter the name of the individual employee. In some branches of the store, this led to floor managers urging their employees to ask customers for a high rating. Following complaints from employees, the organisation called on stores to stop doing this, but the feedback form with open field has remained unchanged. https://www.rtlnieuws.nl/geld-en-werk/artikel/4201941/bijenkorf-stopt-met-genante-beoordeling-van-personeel; https://www.volkskrant.nl/columns-opinie/wat-er-mis-is-met-klantrecensies-over-bijenkorf-verkopers~b2cdc7a9/

77 Competing for the highest possible scores and trying to identify the factors involved can cause stress in workers (Rosenblatt, 2018; Bergeijk, 2018).

Nevertheless, workers may think that such factors do have an impact (see FNV, 2019). It is often not clear to them just how the algorithms allocate jobs. Without further explanation of how the system functions, workers can only rely on what the organisation tells them.

A narrower definition of valuable work

Connecting tracking, appraisal and pay can result in work being reduced and devalued to what is quantifiable, according to authors in various fields (Moore and Hayes, 2018; Mateescu and Nguyen, 2019a; Tippett et al., 2018). The tools track activities that are easy to quantify, such as the number of kilometres driven, keystrokes or client contact time,[78] whereas other activities, such as a safety inspection, brainstorming ideas or supervising other workers, are more difficult for devices to 'capture' and are not tracked or compensated.[79] One example is the US-based design and coding freelance platform Upwork.[80] An (opt-in) work diary periodically reports number of keystrokes, mouse clicks and screenshots to the client. The freelancer is not paid for time marked as 'inactive'. Creative ideas do not always bubble up behind a keyboard, however. But freelancers are not compensated for time that is critical to the work process.

Fast work or good work?

The question is whether clients are cutting off their noses to spite their faces using these new forms of tracking and compensation. How do these systems affect the quality of the finished product? Will the contractor take the time he needs to come up with the best idea, or will he simply get to work on the first thing that occurs to him? The chosen indicators track productivity (to some extent), but say little or nothing about quality.

A study of homecare work in the United Kingdom reveals a similar tension (Moore and Hayes, 2018).[81] Local authorities, struggling with public sector budget cuts, attempted to eliminate the discrepancy between planned (scheduled) time and delivered time providing homecare. Time sheets were replaced by smartphones apps that recorded contact time with service users. Homecare workers were paid only for the client contact time. Their day was fully planned with scheduled visits. This approach undermined homecare worker autonomy and increased their

78 Or pay per page read instead of per downloaded book. Web giant Amazon introduced this form of tracking and remuneration in 2016 for self-published authors on their Kindle platform.

79 Being tracked and paid per travelled kilometre led lorry drivers to skip safety inspections and take fewer breaks, resulting in high-risk situations.

80 https://www.buzzfeednews.com/article/carolineodonovan/upwork-freelancers-work-diary-keystrokes-screenshot

81 The study looked at how homecare was organised and the impact of this on job quality. It showed the effect of different commissioning practices. Most local authorities in the United Kingdom only pay for 'client contact time', saving them about 37% in expenditure. Following complaints from homecare workers and the public service union UNISON, several local authorities committed to an Ethical Care Charter to put the quality of care back on the agenda (Moore and Hayes, 2018).

workload. If a client needed less care than planned, workers felt compelled to stay for the scheduled time in order to receive adequate pay (see also section 3.3.3 on autonomy). Conversely, if clients needed more care than planned, workers were unable to extend their visit because that would impinge on the next scheduled calls. The quality of care came under pressure, as it became more important to deliver care *on time* than to deliver *good care* (Moore and Hayes, 2018).

The examples show that a tracking tool cannot capture everything that is valuable about work. On top of that, workers are themselves affected by the tracking: they may, for example, focus more on monitored tasks, since tracking indicates that an organisation regards those tasks as valuable (Ball, 2010).

3.3.2 Labour market security

This section looks specifically at the relationship between digital monitoring and job insecurity in terms of contract type and the relationship between digital tools and job prospects.

Contract type or contract duration
The use of digital tools does not in itself entail a particular contract type or contract duration. However, the previous section revealed that, when combined with non-standard contracts and remuneration, digital monitoring can adversely affect job quality. Monitoring, appraisal and remuneration are especially tightly intertwined in the platform economy (Pichault and McKeown, 2019; Mateescu and Nguygen, 2019b). There has been growing debate in recent years about the adverse consequences of temporary contracts. One question is whether platform workers should, by law, be regarded as self-employed or as employees. The way in which digital monitoring tools are used may affect the official status of the worker (Rosenblatt et al., 2014). One example is Uber's response after a fatal accident involving an Uber driver. Uber claimed that it bore no responsibility because the driver was not an employee, had no passengers at the time, and was therefore not covered under Uber's insurance. When the victim's family sued, Uber changed its position. Drivers who have logged in and are available for work are now covered by Uber's insurance, even if they do not have passengers. The use of new monitoring technology can affect worker security, in other words.

AI-driven selection: better or worse job prospects?
AI-driven assessment tools help organisations determine who qualifies for a job. As we saw in Chapter 2, such tools can lower the threshold for applicants and may help to reduce discrimination in application procedures, potentially leading to a more inclusive labour market. This will not happen on its own, however.

Researchers are critical of the way these tools function and of their validity. They offer a certain picture of success, but that picture is by no means complete. The benchmarking method, for example, does not recognise the team members working 'behind the scenes' to ensure a salesperson's success. The use of digital tools is therefore not a neutral practice. As we saw in the previous section, these tools cannot capture everything and they put certain indicators under a microscope.

If organisations fail to look critically at how tools function and continue trusting blindly in their rationality and neutrality, biased systems can emerge. In fact, it is very difficult technically speaking to prevent bias in algorithms. There is an ongoing risk that people will be assessed systematically in a particular way and will therefore systematically have poorer job prospects. This process can result in new groups suffering the consequences of discrimination other than for reasons other than the traditional ones, i.e. gender, ethnicity or age (Zuiderveen-Borgesius, 2019).

Another aspect of digital selection tools is that organisations learn a lot about an applicant while the applicant finds out very little about the organisation. Ideally, a job application procedure is a reciprocal process in which both parties share information to see whether they are a good fit.

Sustainable employability: who manages the data and the candidate profile?
With non-standard employment and job insecurity on the rise, sustainable employability is growing more important for workers. One question in that context is what happens to the data that has been collected and the analysis of those data going forward. The organisation or technology vendor manages the data. Can an applicant share his/her profile with another organisation? Will these data ultimately become more important than a CV? Or will the organisation retain possession of the candidate profile?

In a reciprocal employment relationship based on equality, a worker would be able to have access to the profile (e.g. 'an enthusiastic employee' with a certain skillset) and share it with other organisations (see also Adler-Bell and Miller, 2018). This is also a point of discussion among platform workers. They would be able to switch platforms more easily (if they so choose) when they can share their accumulated ratings with other platforms, as research by the Rathenau Instituut has already demonstrated (Smink et al., 2018). At the same time, it is also important for workers to be able to start over somewhere else with a clean slate.

Tracking and automating work
Another question raised by digital monitoring tools concerns the future of work. Routine tasks can be automated easily, as many studies have shown (Van Est and Kool, 2015; WRR, 2015; SER, 2016). The more information we have about how a

certain task is executed (i.e. the more a task is monitored), the better we can determine whether that task can be automated, wholly or in part. For example, digitalisation enabled a firm that installs stairlifts to standardise their processes more than was previously thought possible (Freese et al., 2018). Monitoring tools can thus contribute to automation and can alter the type of work performed.

3.3.3 Quality of the working environment

The final dimension is the quality of the working environment. This includes such matters as physical working conditions, work pace, work-life balance, worker autonomy, learning opportunities or workplace relationships with colleagues and supervisors. Because monitoring also affects worker privacy, we explicitly include this factor as well.

Health and safety in the workplace
Digital monitoring can contribute to a safer workplace. For example, sensors can measure workplace air quality, and fitness trackers can support workers in adopting healthier habits and in reducing stress. Health and safety legislation obliges organisations to endeavour to provide employees with a safe and healthy workplace (see also Chapter 4). That is why monitoring is mandatory in some occupations, for example the tachograph for lorry drivers. Biological monitoring or biomonitoring is permitted in some occupations. Aircraft pilots, maritime captains and train engineers are subject to drug and alcohol testing, for example, and workers in heavy industry undergo tests measuring blood lead levels. The Dutch State Secretary for Social Affairs and Employment, Tamara van Ark, is currently investigating whether drug and alcohol testing is possible in other, specific situations.[82]

Whether invasive or not, the new sensors make it possible to monitor exposure to hazardous substances or unhealthy situations more closely. Organisations abroad have already ratcheted up their use of such techniques for this very reason (Krom et al., 2018). These methods also have their disadvantages, however. In the case of biomonitoring, for example, monitoring protocols and occupational exposure limits specifying proper follow-up are few and far between. What is more, biomonitoring is an invasive form of monitoring and raises questions about the protection of such fundamental rights as privacy (see Krom et al., 2018). We will look more closely at this in Chapter 4. Other methods can also help ensure a safer

82 https://www.rijksoverheid.nl/documenten/kamerstukken/2020/01/16/kamerbrief-alcohol-en-drugstesten-op-de-werkvloer, see also Chapter 4.

and healthier workplace, for example supplying more information or better mechanical ventilation. Monitoring alone will not protect employees, in any case.

> *'It's important not to use all sorts of monitoring procedures without considering how to protect workers on the front end. We shouldn't be seeking the solution in monitoring. Monitoring isn't a replacement, it's complementary. For example, there's still a lot we need to do in the way of product knowledge – knowing what you're working with. Employers often don't even know what sort of health effects certain substances can have, let alone that they instruct their workers accordingly.' Leon de Jong, CNV*

Non-invasive monitoring is difficult to link to a worker's specific activities. It is also unclear who is responsible when certain occupational exposure limits are exceeded. Did the exposure happen in the workplace, or somewhere else?[83] In addition, protocols and biological exposure limits for non-invasive monitoring are not readily available and the data collected may be of a sensitive nature. The Social and Economic Council of the Netherlands (SER) has therefore been asked to advise on the use of biomonitoring and sensor technology for hazardous substances in the workplace (SZW, 2019).

> *'Say you have two jobs and in both you work with the same chemical. Both employers may be abiding by the rules, but you're still doubling your exposure and you're still subject to potential health risks, even though the individual employers are acting responsibly. That's when your own Smart Watch can help you monitor your health.' Amerik Klapwijk, VCP*

Healthy lifestyle

A healthy workplace involves more than exposure to hazardous substances; it also concerns healthy life habits, stress, motivation and workload. In Chapter 3 we discussed various digital tools that focus on these factors and in doing so, fit in well with a responsible sickness prevention policy (Van Lieshout et al., 2014). Employers' association VNO-NCW recommends relaxing some of the legal restrictions on such tools,[84] but they too are not without risk. There is insufficient evidence of their effectiveness and they involve privacy-sensitive data. For example, employers may not simply access or use workers' health data on a whim. We look at this in greater detail in section 4.3.3.

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83 This is also a factor in the private commercial transport sector. After complaints about fatigue and high-risk situations, several online platforms started monitoring how many hours drivers are active on their app and have set a maximum time limit. However, there is no overarching system tracking hours drivers spend working for the different platforms. Who is responsible in the event of an accident when the driver has been on the job for too many hours?

84 We look more closely at this in Chapter 4.

Shifting values

There are other concerns as well. For example, individual monitoring of workload may eventually end up shifting the responsibility for workload management entirely onto the individual worker. But employers and employees are jointly responsible for workload; one worker acting alone cannot solve this problem on his or her own. Team monitoring can also lead to shifting values. Consider, for example, the game pitting departments against one another to see which racks up the most steps first. Focusing on competition and performance may undermine values such as sense of community, camaraderie and solidarity (Whittaker, 2018), while emphasising attributes such as 'healthy' and 'motivated' can put extra pressure on employees (see the following section on workload).

Privacy

Research shows that excessive workplace monitoring can have an adverse impact on worker well-being, workplace culture, productivity, creativity and motivation (Ball, 2010; Connolly, 2017). This impact can be mitigated if management considers how the work is organised (e.g. in terms of pace), how guidance is provided, and the extent to which workers are involved in monitoring (and its initial introduction) (Ball, 2010).

The new technologies for monitoring workers may use new types of personal data, such as movement, location, sleep patterns, word choice or intonation. These are very intimate data. Algorithms can use these data for analytical or diagnostic purposes. In some cases, this is information that workers have not shared themselves or do not even know about themselves. Various employers that we interviewed reported that the tools they use do not access any individual employee data and that they have no wish to do so. Examples include employees practising using the Furhat social robot or using Microsoft's MyAnalytics service. Employers can also opt not to analyse individual data but instead stick to aggregate team or organisation-wide analyses out of concern for worker privacy.

If employers neglect to use data and the ensuing data analyses with due care, they risk infringing worker privacy, undermining the reciprocal employer-worker relationship, and eroding workers' trust in their organisation (Connolly, 2017).

In addition, we saw in Chapter 2 that organisations are also resorting to a growing number of external vendors. The employment relationship no longer consists of the organisation and the worker alone, but also includes this third party. The vendors collect data about workers and have the expertise needed to analyse these data, something that not every organisation is able or wants to do.

Gradually, technology vendors can attain an increasingly powerful position because they have more data at their disposal and their algorithms learn from previous analyses. That is how they grow their market share. The workers thus become doubly dependent, first of all on the organisation and second on the technology vendor.

Who possesses which data? What is being done with the data? In some cases, it may be advisable for the employer to relinquish management of the data to a trusted third party. An occupational physician, for example, is a third party whose work is based explicitly on a relationship of trust. There are legal rules governing the use of data by the employer, the employee and the occupational physician. There is no such relationship of trust in the case of technology vendors. Chapter 4 looks more closely at the protection of workers' privacy under the law.

Workload

Pace

Digital monitoring systems may drive up the pace and intensity of work. Warehouses, call centres and private commercial transport platforms track their workers' activity with precision and optimise work processes on that basis. Workers are given specific instructions about what they are to do and at which speed. Some organisations use gamification to increase the workload, for example with a scoreboard showing who works fastest. Workers who are unable to meet their targets may find their employment contract is not renewed, or they may be penalised or dismissed.[85] Although technology can make work less physically strenuous (e.g. by assisting with lifting or reducing the amount of walking), the work is mentally demanding and stressful (Groenendaal et al., 2020; Berkers et al., 2019).[86] Various media reports have uncovered distressing conditions at Dutch warehouses (Van Bergeijk, 2018; Woutersen, 2019; Van den Braak and Peek, 2018). Workers describe the monitoring systems as a 'mental whip' and feel as if they are being treated like robots.[87] Trade unions are striving for better working conditions, with wages and workload as the most important issues.[88]

As we noted in the previous sections, job quality is impacted by what organisations choose to track and which objectives they pursue. When a call centre wants

85 https://www.nytimes.com/2018/02/01/technology/amazon-wristband-tracking-privacy.html

86 For a detailed summary of job demands, job resources and the attributes of various professionals, see Groenendaal et al. (2020).

87 https://www.theguardian.com/technology/2015/aug/18/amazon-regime-making-british-staff-physically-and-mentally-ill-says-union

88 https://www.fnv.nl/nieuwsbericht/algemeen-nieuws/hoge-werkdruk; https://www.fnv.nl/acties/24-uurseconomie https://www.logistiek.nl/carriere-mensen/nieuws/2019/07/jumbo-en-vakbonden-bereiken-akkoord-over-distributiepersoneel-101168960?vakmedianet-approve-cookies=1; FNV 2019 Riders verdienen beter;

workers to handle as many calls as possible within a given time period, the work becomes stressful. We may also question whether customers (and ultimately the organisation) in fact benefit when employees have to finish up calls as quickly as possible. Tracking can therefore produce perverse incentives that prevent an organisation from achieving its intended results. That is why some insurers are now encouraging call centre operators to engage in longer conversations and are emphasising customer satisfaction. Focusing too much on efficiency and speed can be dehumanising (Bhave, 2014).

Always productive and valuable

There are also tools intended specifically to address workload and support mental and physical fitness. They track social interactions and soft skills and offer feedback on personal development. They may represent interesting learning opportunities, but they can also put more pressure on workers to be productive and enthusiastic at all times and to work constantly on personal growth. What if a worker is going through a hard time or just isn't ready to move forward yet? Workers can grow anxious or stressed about their employability (Neff and Nafus, 2016; Mateescu and Nguyen, 2019a). Non-standard employment may add to the pressure: it can lead to constant self-monitoring and to workers promoting themselves as a 'brand'. The question is whether this new form of self-monitoring is a more or less preferable version of traditional surveillance (Moore and Hayes, 2018).

Right to disconnect

Another factor in the growing level of digitalisation is that many workers have a tablet or smartphone (in many cases, company-issued) allowing them to email and work from home and outside working hours. This too can lead to monitoring (or a feeling of being monitored), with the boss knowing when a worker isn't emailing or working. Conversely, workers can show how hard they're working by sending emails far into the evening. Employees may feel under pressure to be contactable at all times and to be 'connected' at all times. Various studies show that this feeling increase stress and may lead to burn-out, insomnia and relationship problems (Moore et al., 2018; Belkin et al., 2016).

> *'Employees in the healthcare sector use a lot of work-related apps that they're obliged to download. They're expected to keep an eye on the app and respond to messages even when they're off duty. Some people say "just give me a schedule". It may be necessary in some cases to page someone, but the apps raise a different set of expectations altogether.'*
> *Leon de Jong, CNV*

Worker autonomy

In addition to increasing workload, digital monitoring tools can also put pressure on worker autonomy and professionalism. For example, when tasks, pace and outcomes are closely monitored, workers have less discretion to make meaningful decisions about their work (Whittaker, 2018, Moore and Hayes, 2018, Mateescu and Nguyen, 2019b). In the example of homecare described above, workers were not free to deliver the care that they felt was necessary. Monitoring can thus erode workers' jobs. Digital instructions can also make it more difficult to consult with colleagues and arrive at a common solution (Berkers et al., 2019).

An erosion of worker autonomy is not inherent to digital systems, but in part due to the way in which organisations choose to set up the system and arrange the work. The opposite outcome is also possible, with digital monitoring systems enhancing work and offering workers more autonomy (Kool and Van Est, 2015). Take, for example, augmented reality goggles that allow the mechanic wearing them to request help from more experienced peers and to look up information so that he can do more of the work independently (Freese et al., 2018). The study of digital monitoring in the homecare sector in the UK also revealed that some local authorities had chosen not to link earnings directly to work, leading to a more pleasant working climate.[89]

3.4 Conclusion

In this Chapter we considered the significance of digital monitoring technology for job quality. Digital monitoring tools vary considerably and the way in which they impact job quality, in terms of earnings quality, labour market security and quality of the working environment, therefore also varies. Their impact is also contingent on the choices organisations make when setting up their systems and arranging the work (for example the type of contracts they work with).

The technology aims to support a safe and healthy workplace, a better work-life balance, workers' personal development or fairer job prospects for candidates. But its deployment also raises concerns about worker privacy, discrimination by AI systems and mounting workloads. Adverse impacts are particularly noticeable when organisations link performance monitoring directly with remuneration and non-standard contracts. Workers are then under pressure to earn enough and often have little autonomy or scope to work with others. For warehouse workers (and

89 Platform organisations also claim that they support worker autonomy: workers are their own boss, set their hours and pick and choose the gigs that they take on (see for example Wood et al., 2019). However, there are seemingly major differences between different categories of platform workers. Those who depend on the platform for their entire income struggle to earn enough and end up working long hours. The fact some platforms link work and earnings curtails worker freedom even further.

others who perform short-cycle repetitive work), the combination of digital monitoring and non-standard employment contracts drives up the work pace and contributes to poor working conditions. These are workers whose labour market status is already vulnerable.

We have also noted a number of structural issues that cannot be described entirely in terms of earnings quality, labour market security and a quality working environment. For example, this chapter revealed how monitoring is gradually altering how we work and what we regard as valuable work. Tracking, analysing and giving feedback to workers appear to be neutral activities, but in fact they are not. Choosing to track a certain activity puts that activity under the microscope. The effects can be counterproductive. While it may seem productive to urge call centre workers to handle a certain number of calls in a given time frame, the result may well be stressed out employees and dissatisfied customers.

In addition, digital tools track the activities that are easiest to quantify. There is a risk that over time, what is regarded as productive and valuable work will be reduced to only these activities and that other essential work or personal attributes that are less easy to capture in data will become less important or will end up being excluded altogether.

Tracking can also have unintended effects on the work itself and on workplace relations. A system that tracks individual workload can result in a more individualised approach to workload, with employees being able to monitor themselves and do more to address the problem themselves. Individuals only have so much control over this aspect of their work, however. The tools can shift the focus away from the shared responsibility for addressing workload. Electronic monitoring in the homecare sector altered workers' relationship not only with the homecare service organisation but also with their clients and their colleagues.

It has become clear that some aspects of work cannot be captured in data. What a tool tracks affects work processes and relationships and can have unexpected effects. American sociologist William Bruce Cameron expressed it as follows back in 1957: 'Not everything that can be counted counts and not everything that counts can be counted' (Cameron, 1957) This conclusion requires organisations and workers to continually question the usefulness and effect of digital monitoring tools and to exercise due care when weighing up the best interests of workers and organisations. In the next chapter, we look at the legal frameworks that play a role when deploying such tools.

4 Legal frameworks and practical considerations

4.1 Introduction

In the previous chapter we saw that digital monitoring tools can impact job quality and workplace relations. Tools for staff planning and hiring, managing and instructing workers, and support and development of workers, are meant to optimise work, but not all aspects of work can be quantified. We also saw that organisational choices in the implementation of monitoring tools affect how workers perceive these instruments.

In this chapter, we look in more detail at what organisations consider when using such tools in the workplace.[90] We first discuss the most important legal frameworks for this study (section 4.2). We then examine whether these frameworks offer sufficient protection and guidance(section 4.3). We then look at other practical considerations for organisations, ranging from their internal procedures to choices whether or not to monitor certain factors, and the views of various parties in this regard (section 4.4). Finally, we take stock and look at what is needed to implement monitoring technology in the workplace in manner appropriate for all those involved (section 4.5).

4.2 Legal frameworks

An employer may not simply start collecting and analysing worker data without giving it a second thought. We can illustrate this best by giving a few examples.

Suppose an employer plans to start using an automated personnel tracking system. This can be anything from camera surveillance, GPS trackers or keycards to software for monitoring worker email and internet use. Personnel tracking systems allow the employer to collect and record all kinds of data about employees, including information that goes beyond the system's original intention. What are the legal requirements that this employer is obliged to take into account?

90 So far we have referred mainly 'workers' and 'organisations'. In this chapter we will also use the terms 'employee', 'employer', 'client' and 'contractor', specifically because labour law extends different protections in each of these relationships.

Personnel tracking systems infringe employee privacy, of course, and every individual has a right to privacy, even in the workplace. Moreover, such systems often use and generate personal data, which may be processed only under certain conditions. The employer must therefore also comply with the requirements of the General Data Protection Regulation. In addition, the employer must request the consent of works council, in so far as there is one; it must consider whether using the system is consistent with the legal obligation to observe 'good employment practices'; and it must communicate its intention to use the system clearly to its personnel in advance. It is only after complying with all the legal requirements that the employer can commence using the personnel tracking system.

As we saw in Chapter 2, there are many different digital monitoring tools that can be deployed for differing purposes and at different levels. This means that the legal considerations can also differ, depending on the tools used. The personnel tracking system discussed above is just one example. It is beyond the remit of this chapter to explain the legal considerations associated with each individual tool, but broadly speaking, the requirements are the same for most. We have therefore decided to discuss the legal frameworks that apply to virtually every tool and, where necessary, identify the tools subject to legal requirements that call for special consideration.

4.2.1 Fundamental rights

Like everyone else, workers have fundamental rights and freedoms.[91] These fundamental rights are set out in the Dutch Constitution and in various international conventions and sources of European Union law.[92] Our research shows that digital tools for monitoring workers can sometimes (unintentionally) infringe these rights. Below, we discuss a number of significant fundamental rights that play a role in the context of this study.[93]

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91 Like employees, employers also have a number of rights and obligations laid down by law. For example, based on the EU Charter of Fundamental Rights, employers have the freedom to conduct a business. In addition to these fundamental rights, there are also a number of specific rights and obligations that apply to employers. For example, under the Dutch Civil Code, employers also have a 'right to instruct' employees on how to perform work or keep order in the business.

92 Although the Dutch courts cannot review the constitutionality of formal legislation directly, fundamental rights do play an important role in Dutch legal practice. For example, the courts often consider the rights set out in the EU's Charter of Fundamental Rights, the European Convention on Human Rights (ECHR), and the rulings of the European Court of Human Rights (ECtHR), which monitors compliance with the ECHR.

93 We confine ourselves here to fundamental rights that play a role in issues related to digital monitoring technology and will not attempt to provide an exhaustive summary. There are of course other fundamental rights that may come into play, such as the right to freedom of assembly and association, freedom of expression and the right to physical integrity.

Right to equal treatment and the prohibition of discrimination
A number of tools can be associated with the right to equal treatment and the prohibition of discrimination. Unfair discrimination for reasons of religion, ideological convictions, political affiliation, race, gender or any other grounds is unlawful. This is a particular point of concern for digital recruitment and selection tools. Although these are often intended to ensure fairer job application procedures, they can nevertheless have a variety of discriminatory effects (see also Chapters 2 and 3).

Right to privacy
Several monitoring tools carry the risk of infringing the right to privacy. Under this right, everyone is entitled to have their private life respected. This right pertains to personal matters such as human dignity, individual autonomy and personal freedom, but also to professional activities and to entering into and maintaining relationships with others. The right to privacy also applies in the workplace. Employees should therefore be reasonably confident that their privacy will be respected by their employer at all times.

Right to data protection
Beyond the right to privacy, there is also the right to data protection. Although closely related, these are in fact two different fundamental rights. While the first is meant to protect a person's private life, the second establishes a number of mandatory principles for the processing of personal data. The general rules governing such processing are set out in the EU's General Data Protection Regulation (GDPR).

4.2.2 General Data Protection Regulation

In most cases, systems that track, analyse and give feedback to workers make use of personal data, and as we saw earlier, these data may only be processed under certain conditions. The general rules for processing personal data are laid down in the GDPR. We describe them below.[94]

94 The GDPR can be regarded as an update of the EU's 1995 Data Protection Directive and the Netherlands' 1999 Personal Data Protection Act, which was based on the Directive. These two laws no longer reflected today's digital world. The GDPR entered into effect on 25 May 2018.

Box 2: What are personal data?

Personal data are data that can be traced back to an individual, or by which an individual can be identified. Examples of personal data are legion in the work context and include name and address, photographs, telephone numbers, email addresses, fingerprints and medical information. They also include data that reveal something about a person *indirectly*, for example data on the production process that can also be used to track an employee's productivity.

Obviously, some information is very sensitive. The GDPR makes a distinction between *ordinary* and *special categories* of personal data. Processing of ordinary personal data is permitted under certain conditions, while processing of specific categories of personal data (such as information on religion, ethnicity, trade union membership, health or biometric data) is prohibited, *in principle*.[95] These data merit special protection because the context in which they are processed may pose significant risks to the fundamental rights and freedoms of the individual concerned.

Legal basis

Organisations must always be able to invoke a legal basis for processing personal data, and these are identified in the GDPR.[96] One is the consent of the data subject but this usually does not usually apply in the workplace because such consent must be freely given, a requirement that is difficult to meet given the imbalance of power in the employment relationship. Other bases are customarily applied in the workplace, however. For example, the employer may be under a legal obligation to process certain data (for example for tax or pension payment purposes), or processing may be necessary for the performance of the employment contract.

However, these legal bases are not valid for most of the tools discussed in Chapter 2,[97] and so the employer must be able to invoke another legal basis, i.e. by demonstrating that it has a *legitimate interest* in processing personal data. A legitimate interest is deemed to exist if the employer's interest in processing certain

95 Article 9 of the GDPR describes the prohibition on processing special categories of personal data as follows: 'Processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation shall be prohibited.'

96 The GDPR lists six legal bases: consent, contract performance, legal obligations, vital interests of the data subject, public interest and legitimate interest.

97 For exceptions, see section 2.3.1.

data overrides the employee's interest in not having those data processed. There is no exhaustive list of legitimate interests; they can be anything, as long as the interest is lawful. In reality, they often concern the protection of property, prevention of theft or fraud, or the discharge of a duty of care towards employees. They are usually invoked in cases involving the monitoring (digital or otherwise) of email, computer or telephone use and video or other surveillance.

Subsidiarity and proportionality

Even if an employer can demonstrate that it has a legitimate interest in processing personal data, it must take a number of additional factors into account. The GDPR stipulates that data processing must be limited to what is *necessary* in relation to its intended purpose. In line with the principle of *subsidiarity*, the question is whether it can achieve that purpose by less drastic means. In addition, the employer must also comply the principle of *proportionality*, whereby its infringement of the employee's rights must be proportionate to the purpose for which it is processing the data.

The following example illustrates how these concepts influence practical situations. The law allows fingerprints to be used to identify an employee for security purposes, e.g. in a nuclear power plant. This does not mean, however, that the use of biometric data is always permitted. The Dutch footwear chain Manfield and Dutch department store chain HEMA made headlines in 2019 because they used a compulsory fingerprint authorisation system for checkout staff. In the case of Manfield, the court ruled that the employer had not taken the relevant data processing rules properly into account. The court asserted that it was 'not absolutely necessary' to use fingerprint scans to secure the cash registers and that Manfield had not done enough to research more privacy-friendly alternatives (subsidiarity). Its data processing was hence impermissible and the company was ordered to discontinue it (Ranzijn, 2019). Based in part on this ruling, HEMA decided against using a fingerprint authorisation system, as it explained to the news website NU.nl.[98]

Purpose limitation

The GDPR also limits the further processing of data, citing the principle of 'purpose limitation'. This means that data collected for a specific purpose may not be further processed in a manner is 'incompatible' with that purpose. Suppose an employer installs an access control system for security and fire safety purposes that registers when employees enter and leave the premises. It would be incompatible with that original purpose for the employer to subsequently use information on employee arrival and departure times to evaluate their performance. The requirement of

98 See the article at https://www.nu.nl/tech/6014149/hema-doet-vingerscan-voor-personeel-in-de-ban-vanwege-privacywet.html

purpose limitation must be taken into account for all the tools discussed in this report.

Automated decision-making and human intervention

Digital tracking and analysis of workers also makes automated assessment and decision-making possible. This came up in our discussion of the use of video games and video analysis during job application procedures. The GDPR imposes various restrictions on this, however. For example, data subjects, such as employees and job candidates, have the right not to be subject to a decision based *solely* on automated processing. The decisions concerned are those that produce 'legal effects' and that significantly affect the individuals concerned. The automatic rejection of a job applicant is one example of such an effect. The idea behind this prohibition is that no one should be subject to the consequences of an automated decision based on the characteristics of a particular group of which they are a member.

The fully automated processing of job applications without human intervention is therefore prohibited, save for specific exceptions. An employer that nevertheless prefers to use such as system must perform a manual check of each rejected candidate to ensure that the automated decision was valid. Human 'rubberstamping' is unlikely to circumvent the prohibition on automated decisions under the GDPR. The question is how meaningful such human intervention should be.

However, the GDPR does not specify how individuals are to be protected when their legal status is affected by decisions made *with the aid of* digital tools or information systems. There is a reference point in the 1994 ruling by the Registratiekamer (the forerunner of the Dutch Data Protection Authority) concerning systems that employers can use to support decisions affecting legal status. At the time, the Registratiekamer ruled that such a system would have to generate reliable information so that employees could oppose decisions and provide evidence of any falsehoods (Registratiekamer, 1994).[99] It is perfectly conceivable that these basic premises can continue to apply alongside the GDPR.

99 The Registratiekamer follows legal precedent citing the duty to state reasons. See also section 4.2.4 on this subject.

4.2.3 Dutch Works Council Act

Before an organisation can begin processing privacy-sensitive worker data, it must first obtain the consent of its works council.[100] The Dutch Works Councils Act provides that the works council has the right of consent if an employer intends to adopt, amend or revoke its privacy policy, among other things, and to deploy personnel tracking or information systems.

The consent of the works council is therefore always required when employers adopt policy measures to process employees' personal data or schemes designed to monitor employee presence, behaviour or performance.[101] This rule therefore also covers the many systems and tools described in this report. Once an employer has drafted policy measures that have the works council's consent (e.g. to use surveillance cameras), compliance with these arrangements is required. If the employer proceeds to interpret the policy too loosely, the works council can call the employer to account and, if necessary, opt to take the matter to court.

The works council protects employees against measures that encroach too much on their right to privacy. Employees can in fact influence job quality by acting through the works council, giving this representative body an important role in the employment relationship. Unfortunately, not every worker has access to this protection.

For example, in the Netherlands, a works council only becomes mandatory when an organisation has more than fifty employees. Smaller organisations and platforms are therefore not subject to this obligation. Moreover, it turns out that people working under precarious and non-standard contracts are often unable to participate in the works council, are less familiar with staff consultation practices, or do not have enough influence to force changes through the works council (Van der Gaag, 2018).[102]

Transparency and clear communication

Even if all the requirements for data processing have been met and the works council has consented, there is still another important step for employers to take

100 Note that the works council's consent does not automatically mean that the requirements of the GDPR have been fulfilled.

101 For example, the consent of the works council is required when logging employee access to an IT system as part of a data security system. Existing case law suggests that such consent must also be obtained for the use of surveillance cameras in the workplace, for gaining access to employees' email boxes, for customer satisfaction surveys focusing on identifiable employees, or for processing data taken from time clocks, pagers, chip cards and telephone recordings.

102 An investigation in 2015 by the Inspectorate SZW further revealed that not every organisation that is required to establish a works council has in fact done so; https://www.inspectieszw.nl/onderwerpen/werkdruk/documenten/rapporten/2015/07/15/de-aanpak-van-werkdruk-hoe-doen-organisaties-in-nederland-dat

before proceeding. They must inform employees clearly and comprehensively about the forthcoming policy measures. There are various ways of doing this, for example by incorporating the measures into their internal privacy policy or explaining them in the staff manual.

Transparency towards employees and clear communication with them are important legal requirements for data processing. For example, employers are prohibited from monitoring their employees' personal internet and email use if they haven't informed them accordingly. There are a few rare and very specific exceptions conceivable, for example when an employer suspects improper conduct and would jeopardise its investigation by disclosing the measures.

4.2.4 Employment law

In addition to the prevailing fundamental rights and the GDPR, there are also legal frameworks explicitly related to the employment relationship. For example, the Dutch Civil Code sets out provisions governing the employment contract and rules to which employers and employees must adhere.

One significant standard of employment law asserted in the Dutch Civil Code is that of 'good employment practices' (*goed werkgeverschap*).[103] This standard is deliberately left open-ended, i.e. without further explanation, so that the courts can exercise a certain amount of discretion in how they interpret it. This means that the law can move with the times, so to speak, because the courts can determine what good employment practices mean at the time of its ruling, an advantage given that society's views on this matter tend to change. The open-ended nature of this standard means that it can be influenced by other sources of law, international standards, interpretations and codes of conduct.[104]

Although the standard is open-ended, case law allows us to identify a number of underlying principles. In the 1990s, Dutch social law professor Heerma van Voss

103 Section 7:611 of the Dutch Civil Code states: 'The employer and employee must behave as befits a reasonable and fair employer and a reasonable and fair employee'. This section is based on a much older section dating from 1907, which stipulated: 'The employer has a duty to do and refrain from doing all that a good employer should do and refrain from doing in similar circumstances.'

104 In 2019, the courts reviewed the actions of Leiden University (as an employer) in the light of the NVP code of conduct for recruitment and selection. The case concerned an internal job application. Without informing the applicant, the employer approached persons who had not been put forward as references for information about the applicant. It did not share the information it obtained in this manner with the applicant during the procedure, nor was the applicant told that a further investigation had taken place. The applicant was hence unable to respond to this information. In the court's view, this was unscrupulous behaviour and a violation of the NVP code of conduct. The university was ordered to compensate the job applicant for damage he had suffered in uncovering the university's unscrupulous conduct towards him. https://www.rechtspraak.nl/Organisatie-en-contact/Organisatie/Rechtbanken/Rechtbank-Den-Haag/Nieuws/Paginas/Universiteit-Leiden-heeft-in-sollicitatieprocedure-onrechtmatig-gehandeld.aspx.

formulated various principles of good employment practices based on case law (Heerma van Voss, 1993), including the duty to state reasons and the principles of due care, trust, proportionality and equality. These principles require employers to exercise due care in their human resources policies, not to abuse their power as employers, to explain the reasons for far-reaching decisions, to meet expectations, to treat employees equally and to ensure proper insurance coverage.

Unlike 'good employment practices', there is no such thing as 'good contracting practices' under Dutch law. Self-employed persons and platform workers, who are not employees, are therefore not protected in the same way in the Netherlands as workers who have an employment contract. A client does have certain obligations towards the contractor, but these do not go as far as the obligations of an employer towards its employees. Self-employed persons and platform workers are also not covered by default against such risks as loss of earnings owing to an occupational accident. Platform workers in France do have such protection, however. The French recently added a provision to their labour legislation asserting that platform organisations bear a social responsibility towards the people who work through their platform.

Another legal framework that relates explicitly to the employment relationship is the Dutch Working Conditions Act (*Arbeidsomstandighedenwet*), which establishes rules that promote healthy and safe working practices. For example, the employer is obliged to arrange work in such a way that it does not adversely affect employees' health and safety and must therefore perform a risk inventory and evaluation (RI&E). A salient fact for the purposes of our study is that the employer is obliged to pursue a policy aimed at preventing 'psychosocial' strain on the job.[105] This refers not only to physical strain but also to mental health and the prevention of work-related stress. For example, employers should try as much as possible to avoid having employees perform monotonous and fast-paced work.

Right to disconnect

Digital technology can make employees feel as if they are 'always connected', we saw in Chapter 3. Many workers are given a company tablet or smartphone and use it to work from home and outside office hours. In reality, blurring the line between work and private life can have adverse consequences for employee health (Moore et al., 2018; Belkin et al., 2016). In France, such findings led in 2017 to a new law establishing the 'right to disconnect' outside working hours. Larger companies in neighbouring countries have also made agreements with employees about their availability outside office hours. In the Netherlands, the right to

105 Article 3(2) of the Dutch Working Conditions Act.

disconnect was included in a collective agreement (in the disabled care sector) for the first time in September 2019.[106] The Dutch could follow the French in adopting legislation to this effect.

4.3 Do the current frameworks offer sufficient protection and guidance?

It is important to note that the law sets requirements and places restrictions on the use of various tools. Employers must, for example, consider such fundamental rights as the right to privacy, the right to equal treatment and the prohibition of discrimination when using these tools. In addition, data processing must comply with the rules of the GDPR and the Works Council Act, and employers must comply with employment law, including the Working Conditions Act. In short, employers may not simply start analysing worker data without giving it a second thought.

But do the legal frameworks also provide enough clarity on the ground? Is it clear what is and is not allowed? And do the legal frameworks succeed in striking a balance between the employer's and employees' best interests?
Based on case law and various rulings by the data protection authority, we conclude there is some confusion regarding the precise application of the legal frameworks on certain points.

4.3.1 Confusion concerning application of GDPR principles

It is not always clear how various GDPR principles should be interpreted in a workplace context. This is the case for the legal bases that employers may invoke when processing personal data, but also for the concepts of purpose limitation, proportionality, subsidiarity and necessity. Because the principles are often expressed in general terms, they leave considerable scope for interpretation.

Legitimate interest
The legal basis 'legitimate interest' can cause confusion on the ground. After all, when does an employer's interest in processing certain data override the employee's interest in not having these data processed? Our analysis of case law and rulings by EU data protection authorities shows that the employer may process data in various ways based on the legitimate interest argument, provided that it can

106 See for example reports by Dutch public news broadcaster NOS, at https://nos.nl/artikel/2303279-voor-het-eerst-recht-op-onbereikbaarheid-in-cao.html; https://nos.nl/op3/artikel/2150987-mailt-je-baas-in-de-avond-in-frankrijk-hoef-je-niet-meer-te-reageren.html

state proper reasons and organise processing properly. Nevertheless, employers do not always appear to agree with the Dutch Data Protection Authority (DPA), which supervises compliance with laws and rules governing personal data protection.

For example, a parcel delivery service made the names and locations of its delivery staff visible to customers on an online portal, arguing that it had a legitimate interest in doing so. The works council had agreed, but the data protection authority deemed its consent inadmissible.[107] In another case, the DPA ruled against a power company that had checked employees for drugs possession. Although the DPA recognised that an employer might have a legitimate interest in performing such checks, it could not endorse the company's method: it had used a detection dog to collect personal data on employee drugs possession, and that did not meet the requirements of proportionality and subsidiarity.[108] In both cases, the DPA referenced rulings by the European Court of Human Rights indicating that employees are entitled to a reasonable expectation of privacy even in a work situation.

Consent

There is also some confusion regarding consent as a legal basis. In general, consent is almost never valid as a legal basis in an employment relationship because the imbalance of power means that employees are almost never in a position to freely give consent.

The DPA ruled in 2017 that the processing of DNA and psychological data by BrainCompass, an assessment agency, contravened the Dutch Data Protection Act, the precursor to the GDPR. Processing these special categories of personal data always requires the explicit consent of the data subject. The DPA pointed out that particular caution should be exercised when using the legal basis of consent in an employment relationship. BrainCompass subsequently decided to incorporate a number of guarantees. For example, it ceased sharing any information about job applicants with their employer and made it possible to opt out of having any special categories of personal data processed. The DPA then ruled that consent had now been freely given to a sufficient extent and that data processing could proceed.[109]

The question is when consent is 'freely given to a sufficient extent' in an employment relationship. Is that even possible? Assessments based on ordinary personal data are usually also carried out on behalf of prospective employers and

107 https://autoriteitpersoonsgegevens.nl/nl/nieuws/pakketbezorgdienst-staakt-werkwijze-na-onderzoek-cbp.
108 https://autoriteitpersoonsgegevens.nl/nl/nieuws/uniper-trekt-alcohol-en-drugscontrolebeleid-na-onderzoek-ap.
109 https://autoriteitpersoonsgegevens.nl/nl/nieuws/braincompass-past-werkwijze-aan-na-onderzoek-ap

the results are normally shared with them. In those cases, are those being assessed truly in a position to give consent freely?

Purpose limitation

The requirement of purpose limitation can also give rise to discussion in practical situations. When precisely is one purpose compatible with another purpose? It follows from the authoritative opinions of EU data protection authorities that they consider the further processing of data collected for security purposes to monitor employee attendance, performance and customer friendliness to be incompatible with the original purpose.[110] The question is how these opinions relate to new tools that gauge employee engagement by monitoring their emails or chat messages, for example (see section 2.4.2). The original purposes of collecting the data (in the form of emails, chats, etc.) differs from the purposes of the employer's engagement programme. Can employers apply modern techniques to information that has already been collected, and if so, how?

Subsidiarity and proportionality

Finally, it has become clear that the requirements of subsidiarity and proportionality are not always applied in practice, or that they raise questions at the very least. Before using personal data, organisations should ask themselves whether it is necessary to do so at all, or whether there are other, less privacy-sensitive ways of achieving the same purpose. They can do this by performing a so called 'data protection impact assessment' in which they identify all the privacy risks of data processing in advance. After all, the use of personal data requires careful consideration of the interests involved. For example, government organisations are advised to undertake a risk analysis of this kind before employees start using MyAnalytics.[111]

In reality, however, organisations do not always consider the ramifications as carefully as they should.[112] Recall the case of the Dutch footwear chain Manfield, which had their cashiers using a fingerprint registration system to log in and out. In the opinion of the court, Manfield should have investigated the use of more privacy-friendly alternatives, such as a keycard.

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110 Article 29 Working Party in: Opinion 2/2017 on data processing at work (WP249), adopted on 8 June 2017, par. 5.5. https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=610169.The same goes for the data use of a geolocation system, such as WiFi or bluetooth tracking, to verify the employee movements and behaviour.

111 https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/rapporten/2019/06/11/data-protection-impact-assessment-windows-10-enterprise/DPIA+Office+365+ProPlus+spring+2019+22+July+2019+public+version.pdf.

112 Even when they are required to perform a data protection impact assessment (an analysis in which the organisation identifies the privacy risks of a system in advance).

Systems must also meet the requirement of *proportionality*, i.e. the infringement of employee rights must be proportionate to the purpose for which the data processing is intended. The proportionality of an intended data processing operation is not always apparent from an organisation's reasoning, or from the rulings of the DPA. For example, the DPA considered in detail whether and to what extent BrainCompass was allowed to process DNA and whether such processing was necessary for its assessment procedures and evaluation of someone's fitness for work. However, the DPA did not address the proportionality of such activities, whose basis in science remains unproven. If a tool's effectiveness or positive contribution has not been proven, then its use obviously constitutes a disproportionate infringement of employee privacy.[113] When do the DPA, but also employers and employees, believe that is the case? With the number of tools for processing sensitive personal data growing by the day, a clearer answer is needed.

Confusion puts data protection under strain

The above examples show that many GDPR principles exist in a grey area when it comes to their practical application. The boundaries between what is and is not permissible are murky. Such confusion can pose a threat to the right to personal data protection and privacy in the workplace. Anyone seeking out situations in which worker privacy is at risk does not have to search for long. In the past year alone, several Dutch companies have come under fire for (allegedly) infringing the privacy of their employees, including Manfield and HEMA but also supermarket chain Albert Heijn (Van Poppel, 2019) and storage and transhipment firm Vopak.[114]

4.3.2 Risk of discrimination remains

We saw earlier that many companies are digitalising their selection processes in the hope that this will increase staff diversity. Because this entails processing special categories of personal data, it has been suggested that legislation should be introduced establishing the necessary legal basis, according to media reports (Lengton, 2020). However, there is a risk that digital selection tools may also be biased to a certain extent, thus perpetuating the risk of systemic discrimination (Zuiderveen-Borgesius, 2018; Barocas and Selbst, 2016). This can occur when the data used to train the algorithms turn out to be nonrepresentative or to reflect human bias. AI systems can thus reproduce or even amplify the human bias and homogeneity already present in organisations (Sánchez-Monedero, et al. 2019).

113 For example, in 2004, EU data protection authorities indicated that the processing of genetic data in an employment context should be prohibited (Article 29 Working Party, 2004). To this end, they referred to a European study that raised serious doubts about the scientific basis for this type of data use. The authorities were not keen about organisations using genetic data to make predictions about (potential) employees (Article 29 Working Party, 2005).

114 We will return to this topic later in this chapter.

Technology vendors use technical means to attempt to remove any bias from their algorithms. However, not doing so in compliance with EU or national laws and regulations is also a risk.. In one of the first EU studies on combating bias in recruitment and selection tools, the researchers warn that American software vendors that incorporate antidiscrimination methods into their tools often do so based on American social and legal notions of discrimination. These are then exported to European workplaces without considering that national and EU legal frameworks might differ from those in the US (Sánchez-Monedero et al., 2019).[115]

4.3.3 Discussion concerning the Dutch Working Conditions Act and the use of health data

A discussion is currently under way in the Netherlands regarding the extent to which employers should be allowed to process health data to facilitate a safe and healthy workplace. EU and Dutch data protection law regards health data as a special category of personal data that may only be processed under very strict conditions. This goes beyond medical data (such as information registered by an occupational physician, or data collected by apps that measure pulse or blood pressure) and includes data about someone's dietary or smoking habits, for example. Moreover, psychological data can also be regarded as health data, although it is not always clear how the data protection authority defines this term in its rulings.[116]

In everyday practice, employers appear to believe that they must process health data to adhere to good employment practices and comply with the Working Conditions Act. For example, in 2018 the employers' associations MKB-Nederland and VNO-NCW stated that many organisations were finding it difficult to implement

115 The rules for establishing adverse impact due to an unfair and biased selection procedure are more quantified in the US, with the Four-Fifths Rule setting a certain bottom limit.

116 In 2011-2012, the College bescherming persoonsgegevens or CBP (now the DPA) investigated the Youth Care Agency of the Province of Noord-Brabant. The agency required its employees to undergo an assessment for staff appraisal and development purposes. The employees received a personal candidate report that included their scores for self-esteem, need for support, stress resistance, conformity, extraversion, helpfulness, social empathy, sociability, dominance, decisiveness and purposefulness. Although the data say something about the psychological condition, skills and limitations of the employees, the CBP ruled that they were not special categories of data but merely sensitive data. In 2017-2018, the DPA ruled on BrainCompass, an assessment agency that reports on employee personality traits. The agency's reports also discuss the employee's self-image and perceptions of mankind. The DPA concluded that BrainCompass's data processing produces information on the psychological condition, skills and limitations of employees and their emotional capacity, and that these are health data, in part because when combined, they indicate the extent to which the employee is stress-resistant or mentally resilient, for example. Stress resistance was also a factor in the Youth Care Agency case, but evidently not important enough to be able to qualify the data in that case as health data.

the Working Conditions Act because they said that it clashed with the GDPR rules. In their view, these rules resulted in employers 'being unable to do what was mandatory or necessary in one domain because the rules in another domain contradict this'.[117] They argued that the law should provide a specified legal basis for using certain categories of health data.[118] A number of these proposals may appear to be quite radical and run the risk of infringing worker privacy,[119] showing what a fine line there is between compliance with good employment practices and the Working Conditions Act on the one hand and improper intrusion into the private lives and freedom of choice of individual workers on the other. Perhaps the regulators – the Inspectorate SZW and the Dutch Data Protection Authority – can work together to clarify which health data are necessary to comply with the obligations of the Working Conditions Act, good employment practices, and the GDPR.

4.3.4 Heavy weight on the works councils' shoulders

We saw earlier that the works council can protect employees against measures that go too far in infringing their privacy or that have an adverse effect on job quality. In practice, this is turning out to be not only an important but also a difficult task. Works councils often have a heavy weight bearing down on their shoulders. In some cases, it is unclear what part the works council has played and why it did not step on the brakes; in other cases, the works council is forced to call on external experts for assistance.

A recent example of this is Vopak, a company that specialises in the storage and transhipment of liquid and gaseous chemical and oil products. Vopak received negative publicity because of an alleged violation of employee privacy (Van Wijnen, 2019). The company wanted to introduce a far-reaching employee tracking system, on a trial basis. Employees would be given passes that recorded their every movement, for their own safety in Vopak's opinion. The works council expressed its concern that employee privacy would be infringed. It decided to enlist the help of external privacy experts.

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117 https://www.vno-ncw.nl/sites/default/files/een_knellend_probleem.pdf

118 It appears likely that there will soon be a specified legal basis for alcohol and drug testing. In early 2020, the State Secretary for Social Affairs and Employment indicated that she was investigating the possibility of conducting alcohol and drug tests in the workplace in specific high-risk situations. See https://www.rijksoverheid.nl/documenten/kamerstukken/2020/01/16/kamerbrief-alcohol-en-drugstesten-op-de-werkvloer

119 For example, there are those calling for more leniancy when it comes to using wearables to collect data about worker health and to analyse such data in anonymised form. The DPA expressed strong opinions about this in 2016, when it stated that employers have no business collecting and analysing employee health data, even if it is anonymised.

In worst-case scenarios, organisations and their own works councils take each other to court. In 2008, for example, KLM filed a lawsuit against its works council, which had refused to consent to a personnel tracking system in the hangars. The court ruled in the employer's favour at the time.[120]

The question is whether we can expect works councils to be equipped to assess the legal viability and ethical appropriateness of such systems before consenting to them. A works council may, of course, hire external specialists to advise it, but it will only do so if it is already aware of the evident risks involved. In other words, the works council must be capable of assessing the potential impact of such systems.

Finally, it is also important to note that in the Netherlands, organisations must have more than fifty employees before they are required to establish a works council.[121] In theory, this means that employees in smaller organisations are less well protected against the risks to privacy and job quality posed by digital tools.[122] And platform workers have no works council protecting them at all, since they are not employees.

4.3.5 Importance of supervision and enforcement

The desire to implement digital monitoring tools that make a positive contribution to job quality also requires active supervision and enforcement. The DPA, which supervises compliance with the rules governing personal data protection, has a significant role to play in this regard. The DPA has been critical of organisations that process employee data on a number of occasions in recent years, for example in its rulings on two cases in which companies had accessed data from their employees' wearables.[123] It argued that employers were not permitted to process health data collected from wearables and in doing so, established boundaries in a grey area of the law and its application. The confusion about some of the GDPR principles noted earlier makes such rulings even more pertinent.

The Inspectorate SZW also plays a significant role in supervising compliance with various employment-related laws and regulations, such as the Dutch Working

120 See the court's decision at http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:RBAMS:2008:BD6534
121 Or if the establishment of a works council is stipulated in a collective agreement.
122 However, smaller organisations may choose to set up an employee representative body and are obliged to do so if the majority of their employees so wish, but this body has no right of consent in matters relevant to our research. Its right of consent is limited to the establishment, amendment or withdrawal of a working times scheme, health and safety policy, and sickness absenteeism or reintegration policy. https://www.ser.nl/nl/thema/or-medezeggenschap/
123 https://autoriteitpersoonsgegevens.nl/nl/nieuws/ap-verwerking-gezondheidsgegevens-wearables-door-werkgevers-mag-niet

Conditions Act. For example, it plays an important part in checking whether employers are taking appropriate measures to prevent monotonous and fast-paced work, or to reduce psychosocial strain on the job. A recent survey by the Inspectorate shows that only a third of Dutch companies draw up the compulsory RI&E inventory.[124] The Inspectorate's traditional focus of attention is the physical job-related risks, for example overseeing safety in the workplace. Since 2016, however, it has also focused more explicitly on workload. Inspections conducted in various sectors, including the judiciary, the security industry, the debt collection sector and, more recently, accounting showed that employers often still fall short in this regard.[125] The Inspectorate could supplement these efforts by zeroing in on other dimensions of psychosocial strain on the job, such as monotonous and fast-paced work arising from the use of monitoring and other technology in the workplace.

Given the discussion surrounding the use of health data and the fine line between the obligations of the Working Conditions Act and good employment practices on the one hand and compliance with the GDPR on the other, the DPA and the Inspectorate SZW might consider joining forces to clarify which health data employers must collect to comply with legal obligations.

The Inspectorate SZW also has an important role to play in preventing discrimination. The bill proposing the 'Act on Supervision of Non-discriminatory Recruitment and Selection', which is to be incorporated into the Working Conditions Act and the Placement of Personnel by Intermediaries Act (Waadi), is meant to compel employers and intermediaries to pursue a policy aimed at preventing discrimination in recruitment and selection procedures. The bill gives the Inspectorate SZW the power to exercise supervision and, if necessary, impose sanctions. The Inspectorate has indicated that it is especially interested in automated systems and their underlying algorithms. What this will mean in practical terms is still unclear, however.

> *'The plan is to make the user (that is, the employer or recruiter) responsible for non-discriminatory recruitment and selection, and not those who actually developed the algorithms. Employers have a responsibility not to use a system indiscriminately. However, it is still unclear what exactly the inspectors will have to watch out for. If an employer says "I'm using system x", what should the inspector do then?' Dennis Lanjouw, Inspectorate SZW*

124 Arbeidsinspectie SZW (2019) *Arbo in bedrijf 2018*, retrieved from https://www.inspectieszw.nl/publicaties/rapporten/2019/07/16/arbo-in-bedrijf-2018

125 https://www.nrc.nl/nieuws/2020/02/17/inspectie-szw-accountantskantoren-doen-te-weinig-tegen-werkstress-a3990706

4.3.6 Good employment practices

As we noted in section 4.2.4, employers must adhere to good employment practices as a standard of Dutch employment law. We observed that this is an open-ended standard, giving courts the discretion to determine what good employment practices mean in the present day and age. The standard also plays a role in shaping the relationship between technology and work. Since the 1980s (and possibly earlier), the Dutch courts have considered the permissibility of using technology in the workplace in the light of good employment practices.[126]

The open-ended nature of the standard means that they can allow their rulings on what constitutes good employment practices to be influenced by other sources of law, international standards, interpretations and codes of conduct. This in fact provides a 'hook' on which to hang future policy concerning the deployment of monitoring technology in the workplace. For example, the courts set great store by compliance with codes of conduct such as the NVP code of conduct for recruitment and selection procedures, which has broad support among Dutch employers. A new NVP code of conduct was introduced in February 2020 that also covers video interviews and the use of AI.[127] The underlying algorithms must be validated and transparent and the potential risks and shortcomings must be made clear. However, there are no rules clarifying which requirements apply and how this can be verified.

The good employment practices standard also clears the way for the social partners to agree on the use of workplace monitoring technology in a manner that is beneficial to all the parties. This makes it possible to look beyond permissibility based on the GDPR alone and to consider the appropriateness of the various tools from an ethical perspective. When do good employment practices require data processing and when do they not? Does this standard also imply that employers should exercise restraint in processing data?

126 In the 1985 KOMA case, for example, it was argued that the long-term and clandestine use of camera surveillance was unacceptable 'from the point of view of normal human treatment'. By using camera surveillance anyway, the employer, KOMA, acted contrary to good employment practices. In 1989, in the Distrivox case, the court indicated that the Dutch Postal, Telephone and Telegraph Service (PTT) could not eavesdrop on its own telephone operators as part of a job appraisal. It had done so without its employees' knowledge. Clandestine eavesdropping was not an example of 'good employment practices'.

127 https://www.nvp-hrnetwerk.nl/sollicitatiecode/

4.4 Considerations of organisations and stakeholders

4.4.1 Internal governance

The requirements and restrictions on the use of employee data imposed by the GDPR also influence the internal governance of organisations. The interviews we conducted for this study reveal that the GDPR has encouraged organisations to implement technical and organisational measures aimed at ensuring compliance with the law and regulations.

Our respondents indicate that they always ask for authorisation from various entities within the organisation before using personal data. If the HR unit or the Analytics department asks to use certain data, they must first check with the specialists in their Legal & Compliance division, who ascertain whether such use is permissible. In some cases, organisations have set up a special data usage board or employee data committee to advise on data use. These entities consider various questions, such as 'How is the organisation handling data?', 'Who is in charge?' or 'What is being done to guarantee the transparency of the systems?'.

> *'An organisation can' t just start processing data on a whim. Such data requests must always be authorised by all sorts of entities within the organisation. There are a bunch of procedural hoops to jump through first.' Sander Buijsrogge, Deloitte*

One way in which organisations attempt to safeguard privacy is by not collecting data from individual workers. They only use aggregated group data that cannot be traced back to individual persons. Organisations also seek to safeguard privacy by accessing only the outcomes of data analysis but not the actual data. In such cases, the organisation chooses to outsource the data analysis and data management to a trusted third party. But this practice also raise new questions. After all, how advisable is it to let a third party access large quantities of data from different companies when that will make it more powerful? And is there enough supervision of how these third parties use the data?

4.4.2 Not confined to what is technically possible and legally permissible

The way in which technology is used in the workplace is never confined to what is technologically possible and legally permissible. In Chapter 1, for example, we saw

that some employers opted not to adopt Taylorist scientific management practices for ideological reasons. Similar considerations still play a role in employment practices today. Employers also make certain ethical choices when introducing digital monitoring tools in the workplace. In some cases, they ascertain that a particular technology does not fit in with their corporate culture or how they prefer to interact with their employees.

> *'The question isn't simply whether something is technically possible and lawful, the question is also "Do we in fact want this?" So, 'can we', 'may we' and 'should we' are recurring concerns.' Tertia Wiedenhof, Rabobank*

Our respondents state that they give a lot of thought to the appropriateness of the systems that they are considering deploying. For example, some companies consider the feelings and associations that the systems evoke in workers. After conducting a pilot, they talk to employees about their experiences. These organisations find it important to invest in internal support and consider how best to arrange employee consultation. They do so by discussing matters with the employee participation council or trade union. Other organisations say that they are not experimenting with digital monitoring tools at all, or very little, because they expect it to stir up controversy among their workers.

According to a technology vendor, another factor is that employers find certain things 'scary' even if permitted by law. One example is using emails to analyse employee sentiment. This method allows the organisation to survey employee satisfaction in real time rather than once a year. The organisation sees the general outcomes and not any data from individual employees. Even so, few organisations use this method, possibly because they do not consider it compatible with good employment practices.

A legal framework does not always reflect expectations in the workplace. And so companies look not only at what is technologically possible and legally permissible, but also at the advisability of tools. In a few cases, they have even established a separate ethics unit that examines the views of various different stakeholders.

What makes companies decide to use the tools anyway?
With companies themselves reporting that certain monitoring tools involve all sorts of legal, ethical and societal risks, why do so many go ahead and use them anyway?

Our interviews with several companies reveal that many organisations are very confident about what the technology can do for them. They are excited about these prospects but are less aware of the tools' technical limitations and the questionable

validity of their results. Any ethical and legal qualms they have mainly concern the protection of privacy or possible bias in algorithms. They think that the digital tools are beneficial for organisation *and* workers, as long they are used in a humane and proportionate manner. These attitudes are consistent with a widespread sense of public optimism about these tools, i.e. that they will lead to more informed, fact-based decisions (Van Dijck, 2014; Kool et al., 2015). In the previous chapter, however, we saw that data cannot capture everything that is valuable about work or about workers.

Another important reason is brand image. Many organisations believe that using innovative workplace tools helps them to market themselves as a modern and innovative employer. That is also the case for digital selection tools, which allow employers to project a progressive or inclusive image of themselves to prospective job candidates. Moreover, 'workforce experience' is becoming increasingly important and organisations expect that smart tools can help to enhance that experience.

Brand image can also inhibit the use of digital tools. For example, one respondent stated that he did not want the notoriety of being the first company to use a controversial new technology. Reputation risk may spur organisations to refrain from using technology and data. That was the case for Dutch supermarket chain Albert Heijn. It made headlines in 2019 for running a trial in which it asked its employees to upload photographs of themselves to an app in their underwear or in tight-fitting clothing. An algorithm would then use the photos to size the employee for a new uniform. After all the negative publicity, the chain decided to cancel the trial (Hofman, 2019).

4.4.3 The importance of transparency and dialogue

Our respondents agree on one key criterion for the successful implementation of technology in the workplace: transparency and communication. Employers see employee engagement and critical thinking as advantages.

> *'Explain, explain, explain. It all comes down to honest communication with employees. Be transparent about everything that you want to do… It's good for employees to strike a critical tone. That sparks discussion and communication and fosters transparency about what we do and why we're doing it.' Françoise Rost van Tonningen, Rabobank*

Respondents say that it is important to involve the organisation's workers as much as possible in planning the tools, preferably at an early stage, and then to monitor

what they think of them. Another important factor is to let them know what the organisation is doing with the data it is collecting. If these factors are not properly addressed, workers will be suspicious of the organisation, and that will not benefit anyone.

> *'Under the GDPR, employees have the right to know "from start to finish" how their organisation is handling their data: what does it want to analyse, using which data, and for what purpose? I always push for as much process transparency as possible. For example, if you state that you're using employee data to track and improve their well-being, then you can't use the same employee data for promotional decision-making. If the organisation wants to do both, they either have to state this explicitly in advance or go back to the employees and tell them about this new purpose and get their permission again.' Sander Buijsrogge, Deloitte*

Employers' associations and trade unions also point out that dialogue concerning the use of these tools is crucial for maintaining enduring workplace relations. Both insist that employers and employees have to work together on building a good employment relationship.

> *'Digitalisation needs to be the product of both sides working together. Both the employee's best interests and the company's long-term strategy need to be taken into account. In the end, I think employees and employers both want to get the most out of digitalisation. But that's only possible if the underlying conditions are right. Essential factors are professional discretion and social innovation.' Amerik Klapwijk, VCP*

Employers' association AWVN cautions against the adverse consequences of a personnel policy that fails to adequately take workers needs into account.[128] It points out that the employment relationship is reciprocal by definition. If the employer is making calculated use of digital technology in a bid to control employees, employees will also engage in calculated behaviour in return. Ultimately, both parties benefit from a good employment relationship. It can therefore also be in the employer's best interest to exercise restraint in the use of digital tools. For example, they can opt to use such tools as a catalyst for discussion but not to take data-driven decisions.

> *'It's all about the intentions behind your choices as an employer… Ultimately, everyone benefits when the interaction between employer and employee is good.' Piet Vessies, AWVN*

128 See '*De gele hesjes werken ook bij u'* at https://www.awvn.nl/publicaties/podcast/gele-hesjes/

Continuous dialogue is important not only within individual organisations, however. Several respondents also favour a broad public debate about the opportunities and risks associated with workplace technology.

> *'It would be very cool if companies would unite to draft their own code of conduct. Just to understand what we're all doing as a group. To grasp what the technology does, to join together in exploring the splendid opportunities that it affords, but also to think about how far we're going to take it, and what limits we're going to impose on ourselves.' Marjolein Ten Hoonte, Randstad*

Based on this debate, organisations can also agree as a group how they are going to use the technology. For example, the European Trade Union Institute (ETUI) recommends updating the legal frameworks and the dialogue with the social partners (ETUI, 2020). It has drawn attention to worker privacy and data protection and wants clearer rules regarding worker surveillance, tracking and monitoring. The German federal government's data ethics committee has asked the social partners to agree on a joint position regarding employee data protection (Daten Ethik Kommission, 2020).

4.5 Conclusion

In this chapter we have seen that the law imposes certain requirements and restrictions on the use of digital tools for tracking, analysing and giving feedback to workers. Organisations cannot simply start using such tools without complying with the relevant laws and regulations. Moreover, they themselves must also consider various ethical and other factors regarding their use.

Nevertheless, we also saw that the existing legal frameworks do not always provide sufficient clarity. For example, it is not always clear how some GDPR principles should be interpreted in the modern workplace. It would be advisable for the Dutch Data Protection Authority to express its views on this matter, for example by providing further guidance. This holds true for several different GDPR principles, including the legal bases of consent and legitimate interest, but also for such concepts as purpose limitation, subsidiarity and proportionality.

There is also confusion concerning the use of special categories of personal data to achieve such purposes as diversity and a safe and healthy workplace, and the permitted use of data when implementing the Working Conditions Act and good employment practices. There is a fine line between compliance with good

employment practices and the Working Conditions Act on the one hand and the unauthorised infringement of workers' privacy on the other.

We also noted the importance of supervision and enforcement of the existing legal frameworks with respect to protecting privacy, preventing unlawful discrimination and addressing workload. The Dutch Data Protection Authority supervises compliance with the GDPR and may be able to provide more clarity on how to apply various GDPR principles in the workplace by issuing further guidance. The Inspectorate SZW oversees the Working Conditions Act. Given the discussion surrounding the use of health data, the DPA and the Inspectorate SZW might consider joining forces to clarify which data, on health or otherwise, employers must collect to comply with their obligations under the Working Conditions Act, good employment practices and the GDPR.

The Working Conditions Act offers scope for addressing workload (including mental strain). Since 2016, the Inspectorate SZW has focused explicitly on workload. The Inspectorate might also consider investigating the impact of monitoring technology on monotonous and fast-paced work (for example the work carried out by order pickers in warehouses).

Once the bill proposing the 'Act on Supervision of Non-discriminatory Recruitment and Selection' has been passed, the Inspectorate will also be looking into possible discrimination by automated systems. How it will do this in practical terms is still unclear, however.

We also noted that the concept of good employment practices has no equivalent in the case of self-employed and platform workers. Platform workers in France do have far-reaching protection of this kind, however. For example, the French recently added a provision to their labour legislation asserting that platform organisations bear a social responsibility towards the people who work through their platform. The Netherlands could also look into such as possibility.

We further concluded that it is important for employers and employees to enter into (and to remain in) dialogue with each other about what constitutes appropriate use of technology in the workplace. The technology for tracking, analysing and giving feedback to workers continues to develop at a dizzying pace, necessitating a discussion between employers, trade unions and technology vendors about its advisability. Such a discussion must go beyond such issues as privacy, discrimination and workload to encompass the limitations of data, as it is clear that work, and workers, can only be captured in data to a limited extent.

The open-ended standard of good employment practices allows for a more specific follow-up to the results of this discussion. Working with this standard makes it possible for other sources of law, codes of conduct and public opinion to find their way into workplace practices. One example is the NVP's code of conduct for recruitment and selection procedures. The courts set great store by compliance with codes of conduct, regarding them as a practical interpretation of legal standards. This in fact provides a legal 'hook' for looking beyond permissibility under the GDPR and also for making agreements on the ethical advisability of the tools.

5 Conclusion

We were asked by the Dutch House of Representatives' Social Affairs and Employment Committee to investigate what new workplace monitoring technologies mean for job quality. In this report, we share our findings. By workplace monitoring technology we mean technology that can track, analyse and give feedback to workers.[129] We have identified three areas in which such technologies are used: in strategic staff planning and hiring, in managing and instructing of workers, and for tsupport and development of workers. Our study consisted of desk research, a literature review, and interviews with technology vendors, employers, academic experts, trade unions, an employers' association and a gig platform company (see appendix). We also analysed the relevant legal frameworks.

In this chapter we first summarise the most important findings of each chapter (section 5.1) and present our conclusions (section 5.2). We then identify various policy options for the responsible use of workplace monitoring technology (section 5.3).

5.1 Digital monitoring and job quality

An historical perspective on monitoring

We began this report by considering the history of workplace monitoring. It became clear that tracking, analysing and giving feedback to workers is not a new phenomenon but part of the modern employment relationship. At the same time, it is also a means of controlling workers, something that puts the reciprocity of that relationship under pressure. History teaches us that this led to excesses in various periods, with humans becoming a mere extension of the machine and losing autonomy and control over the labour process, giving rise to distressing social conditions for workers. Chapter 1 made clear that the efforts of the Dutch government, trade unions and other parties resulted in greater protection for workers under the law. In the 1980s and 1990s, the advent of IT and the introduction of electronic monitoring also sparked discussion of their effect on workers, leading to further rules on the use of workplace monitoring. Those rules sought to strike a balance between organisational and worker interests, and between what was technically possible and socially desirable.

129 Monitor comes from the Latin word *monitor* (advisor, supervisor) and *monēre* (observe, warn, supervise).

New monitoring tools

Although monitoring is part of working life, nowadays we see a growing number of digital tools for tracking, analysing and giving feedback to workers. Monitoring has changed, as we saw in Chapter 2. Technology enables organisations to find out more about their workers than ever before. Some tools are simply digital versions of data that organisations had already collected, such as a personnel file. Other tools collect new and, at times, highly intimate data, such as DNA, facial expressions, intonation, word choice, and movement or sleep patterns. Algorithms analyse this data, in some cases by means of artificial intelligence, to arrive at new insights, for example about sickness absenteeism, personality traits or employee engagement. Sometimes the systems make automated or semi-automated decisions about workers, such as whether or not to invite someone for a job interview.

The methods used to give feedback have also changed, with organisations now using gaming techniques and nudges, for example. Feedback is also given at different levels, i.e. to individuals, to teams, or organisation-wide. The final difference with the past is that monitoring is no longer limited exclusively to the interaction between the organisation and the worker, but also involves technology vendors that collect and analyse data on workers. It is not always clear exactly which data they are collecting, and who will be able to analyse those data going forward.

These digital tools meet organisations' need to make more informed decisions about their workers and their personnel policy, for example, by removing discrimination from job application procedures, better instructing employees, and improving employee satisfaction and health. The tools do not always do what they promise to do, however. The validity of various tools (do they actually measure what they are intended to measure?) is open to question and the connections that they claim to reveal are based on shaky evidence, for example between facial expression and personality, or between DNA and competencies.

Organisations don't not always realistic expectations about what new technology can deliver. Even when digital tools are used, it is a complex challenge to prevent discrimination, identify success factors or define what constitutes workload. It is very difficult technically speaking to prevent bias in algorithms. And once bias has been identified, it can be tricky to remove it from the system, for example owing to an nonrepresentative dataset or existing biases in the dataset.

Job quality

What do these enhanced tools for digitally tracking, analysing and giving feedback to workers mean for them and for workplace relations? Chapter 2 revealed that digital monitoring technologies vary considerably and that the way in which they

impact job quality in terms of earnings quality, labour market security and quality of the working environment therefore also varies. Their impact is also contingent on the choices organisations make when setting up their systems and arranging the work (for example the type of contracts they work with).

Based on our research, we can identify a number of overarching influences. The technology aims to support a safe and healthy workplace, a better work-life balance, workers' personal development or fairer job prospects for candidates. But the growing use of data and algorithms also raises questions about worker privacy. After all, organisations, and technology vendors, are collecting more and more data about them. What is being done with these data now and going forward? By collecting more data and better training their algorithms, technology vendors may be amassing more power, step by step. Workers are thus becoming doubly dependent, first of all on the organisation and second on the technology vendor. In some cases, it may be advisable for the employer to relinquish data management and analysis a trusted third party, as is already the case for employees on sick leave. The occupational physician is a third party whose work is based on a relationship of trust, however, and there are legal rules governing the use of such data. At present, there is no such relationship of trust in the case of technology vendors.

Chapter 3 made clear that digital monitoring tools can also have material consequences for workers, for example by ruling them out for a job, promotion or contract renewal. Although there are biases in the traditional job application process, discrimination is also a risk in AI-driven selection procedures. Adverse effects are also apparent when an organisation links monitoring to performance appraisal and remuneration or contract extension (in the case of a non-standard employment contract). Potential effects are an enormously heavy workload and dehumanising work, as in the case of order pickers at distribution centres.

One underlying problem is that digital tools track the work activities and job tasks that are easiest to quantify. There is a risk that what is regarded as productive and valuable work will be reduced to only these activities, and that other essential activities or attributes of people that are less easy to capture in data will not be included in the analysis and therefore become less important or end up being excluded altogether. The danger is that by quantifying, organisations may be undercutting the value of work instead of maximising it.

Regulatory safeguards

In Chapter 4 we saw that various regulatory frameworks impose requirements and restrictions on the use of data and algorithms in the workplace. In this report, we have focused in particular on fundamental rights (privacy, data protection and non-

discrimination), the General Data Protection Regulation (GDPR), the Dutch Works Councils Act and employment law (including the Working Conditions Act and 'good employment practices'). These frameworks serve (among other things) to protect the status of workers with respect to privacy, discrimination or health and safety in the workplace, for example. However, our analysis also shows that there are several ambiguities that require further explanation.

The GDPR stipulates conditions that also apply within the context of the employment relationship. General principles, such as the legal basis, proportionality and subsidiarity, are essential here. The GDPR also imposes requirements on automated decision-making. Job candidates have the right not to be subject to a decision based solely on automated processing, for example the automated rejection of their application.[130] The Dutch Data Protection Authority (DPA) oversees compliance with the GDPR. Our legal analysis shows that it is not always entirely clear how various GDPR principles should be interpreted in a workplace context, i.e. the principles of consent and legitimate interest, and such concepts as purpose limitation, subsidiarity and proportionality.

As a result, the right to data protection and privacy in the workplace may be compromised, not least because digital monitoring tools increasingly process special categories of personal data. It would be advisable for the DPA to issue more detailed guidance on how to interpret these principles in the workplace. A discussion has also arisen about the use of health data in the workplace (such as movement and sleep patterns). Perhaps the DPA and the Inspectorate SZW can work together to clarify which personal data are necessary to comply with the obligations of the Working Conditions Act, good employment practices, and the GDPR.

Unfair discrimination is prohibited in the Netherlands. Digital selection tools can help to eliminate discrimination from job application procedures, but they are themselves not without bias. Discrimination in job application procedures is currently the subject of much scrutiny among policymakers. The bill proposing the 'Act on Supervision of Non-discriminatory Recruitment and Selection' will require employers and intermediaries to pursue a policy on this matter and will be incorporated into the Working Conditions Act. The Inspectorate SZW will supervise compliance with the Act and has indicated that it is especially interested in automated systems and their underlying algorithms. What this will mean in practical terms is unclear, however.

130 Meaningful human intervention is required. One of the reasons behind this provision is to prevent certain groups from being systematically disadvantaged.

The Dutch Working Conditions Act stipulates that organisations must endeavour to ensure a safe and healthy workplace. They must introduce measures promoting both physical and mental health (for example to prevent work-related stress and avoid monotonous and fast-paced work). The act offers scope for addressing workload. The Inspectorate SZW plays an important role in verifying whether employers are taking appropriate measures. The Inspectorate's traditional focus of attention is the physical job-related risks, for example overseeing safety in the workplace. Since 2016, however, it has also concentrated on workload and has found that employers in various sectors often fall short in this regard. The Inspectorate could supplement its efforts by zeroing in on other dimensions of psychosocial strain, such as monotonous and fast-paced work arising from the use of monitoring and other technology in the workplace.

Finally, we must note the duty to adhere to 'good employment practices' as defined in employment law.[131] This is an open-ended standard and obliges employers and employees to conduct themselves as befits a good employer and a good employee, for example by exercising due care in personnel policy or stating the reasons for major decisions. Working with this standard makes it possible for other sources of law, codes of conduct and public opinion to find their way into workplace practices, for example, the NVP code of conduct for recruitment and selection procedures, which has broad support among Dutch employers. A new NVP code of conduct was introduced in February 2020 that also covers video job interviews and the use of AI.[132] The underlying algorithms must be validated and transparent and the potential risks and shortcomings must be made clear. However, there are no rules clarifying which requirements apply and how this can be verified.

We also noted that the concept of good employment practices has no equivalent in the Netherlands for self-employed and platform workers. The French have now added a legal provision asserting that platform organisations bear a social responsibility towards the people who work through their platform.

131 Article 7:611 of the Dutch Civil Code.

132 https://www.nvp-hrnetwerk.nl/sollicitatiecode/On top of that, employers purchase technology and do not always have a clear understanding of the choices and assumptions underlying the algorithm. The Inspectorate SZW is considering making the users (the employers who use AI tools in the job application procedure) responsible for non-discrimination. See also Chapter 4.

5.2 Valuable work

'Not everything that can be counted counts and not everything that counts can be counted' (Bruce William Cameron, 1957).

The aim of this study was to examine new tools that track, analyse and give feedback to workers and how they influence job quality. We saw that there are different kinds of monitoring tools and that their impact on job quality also varies. Our study has also unearthed a number of concerns that apply across the board, however.

The tools are consistent with widely held views of what constitutes good management practices: decision-making based on 'facts', fair selection procedures, informed and evidence-based personnel policy, proper instruction of workers, and opportunities for personal development. The idea is that the digital tools are beneficial for organisation *and* workers, as long they are used in a humane and proportionate manner. That means that organisations consider what responsible use entails on a case-by-case basis, whereby they ensure that the tools do not infringe worker privacy, do not discriminate and, for example, contribute in a validated manner to managing workload.

Our report has revealed a number of reservations concerning the foregoing, however. What sort of 'facts' are involved? And do the data actually produce the sort of insights that organisations intend? In this study, we saw that valuable facets of work are difficult to capture fully in data.

To begin with, organisations often have unrealistic expectations about what digital tools can achieve. They collect intimate data on workers to learn more about their productivity, suitability, workload, health or engagement, but these factors are difficult to measure, even with digital tools. Researchers, for example, do not yet know which factors contribute to personal success. It is difficult to predict human behaviour, such as the likelihood of an employee leaving an organisation or the probability of a candidate being suitable for a job. There are also questions about the validity of various tools (are they in fact measuring what they are intended to measure?). Digital tools may therefore produce only a limited, or even inaccurate, picture of workers and their work.

Second, the use digital monitoring tools can change workplace processes and relationships. Choosing to track a certain aspect of work tells workers that the organisation regards that aspect as important. It then comes in for more attention, often at the expense of other matters, perhaps leading to unintended and, occasionally, counterproductive effects. Giving employees a tool that counsels them

on how to cope with their workload may, for example, gradually cause the responsibility for addressing workload to be regarded as an individual rather than a shared responsibility. Making it more important to deliver care *on time* may be at the expense of good care. Focusing too much on efficiency and speed can be dehumanising, as we see in the working conditions of warehouse order pickers, who are reduced to robots. Digitally tracking, analysing and giving feedback can thus unintentionally erode job tasks and workplace relations: it can be detrimental to worker professionalism, to the discretion workers have to take meaningful decisions, and to their collaboration or communication with others.

The quest for a 'data-driven' workplace thus exposes a dominant rationale in which organisations use data to understand people. We are moving towards a labour market in which quantitative data will be crucial for predicting behaviour and for taking decisions that impact employment opportunities. Even though organisations are seeking to maximise the value of work with digital tools, they are in fact in danger of undercutting that value.

The discussion concerning the responsible use of digital monitoring tools in the workplace should therefore not only focus on protecting privacy, preventing discrimination and tackling workloads. There must be a more fundamental discussion about the influence of quantitative instruments on the value of work and changing workplace relations. That encompasses more than the relationship between workers and organisations; digital tools also change the relationship with other parties, such as colleagues, suppliers, customers, clients or inspectorates.

The foregoing has led us to the following conclusion.
Enhanced tools for digitally tracking, analysing and giving feedback to workers can have adverse consequences for workers and for job quality in general. They affect employment opportunities, performance appraisals and pay. They also increase the amount of information that organisations have about workers. Additionally, these tools change workplace relations, not only between organisations, workers and technology vendors, but also between workers themselves.

Moreover, the underlying view that humans can be 'captured' in data results in too limited a notion of what valuable work actually is. Even though organisations are seeking to maximise the value of work, they are in fact in danger of undercutting that value.

This conclusion calls for a broad public and political dialogue about the appropriate use of monitoring technology and valuable work.

5.3 Recommendations

Below, we identify three courses of action for organisations, technology vendors, social partners, policymakers and regulators to take with regard to this dialogue.

1. Discuss the appropriate use of data analysis in the workplace
The Rathenau Instituut invites employers' associations and trade unions, online platforms, workers and technology vendors to discuss the use of data in the workplace and to identify the underlying principles for such use. Base the discussion on the premise that enduring workplace relations call for reciprocity and mutual trust, with both organisations and workers benefitting. In this discussion, take the following three points into account:

- Be realistic about the opportunities and limitations of technology and have an open discussion about what constitutes valuable work. Prevent digital monitoring technology from impoverishing jobs and undercutting workplace relations. Consider the differences in legal protection between employees, platform workers and the self-employed.
- Be cautious about using special categories of personal data and automated or semi-automated decision-making. Be especially alert to protect job candidates: clarify how algorithms work, and apply the principles of proportionality (is the breach of privacy in proportion to the intended purpose?), and subsidiarity (is there a privacy-friendly alternative available?).
- The use of digital tools changes workplace relations between workers and an organisation, but also between colleagues, suppliers, customers or regulatory bodies. Be aware of the unintentional or undesirable effects of these changes. Pay close attention to the position of the third party that influences workplace relations: the technology vendors. Explore the capabilities and terms and conditions of trusted third parties who can manage employee data.

2. Set quality requirements for digital monitoring tools
Our study shows that there is still too little hard evidence of the validity of various tools, including selection tools and AI-driven assessment – precisely an area where decisions based on these tools may be prejudicial to workers (as well as job applicants). The Dutch Committee on Test and Testing (COTAN), part of the Dutch Association of Psychologists (NIP), sets requirements for the quality of psychological tests, but that is not the case for the new tools, which are not subject to a quality review. The NVP, the Dutch Network for HR professionals, introduced a new code of conduct in February 2020 that also covers video job interviews and the

use of AI.[133] Under the code, algorithms must be validated and transparent and potential risks and shortcomings must be clear. However, there are no rules clarifying which requirements apply and how this can be verified. The relevant stakeholders should flesh out the details as quickly as possible.

3. Invest in active supervision and enforcement

The current legal frameworks set requirements for and impose limits on the use of digital monitoring tools but it is unclear in practical terms how certain legal principles should be applied in the workplace. That is why regulatory bodies such as the Dutch Data Protection Authority (DPA) and the Inspectorate SZW (the Dutch labour inspectorate) play an important role in enforcing these frameworks. Four issues merit special attention in that context:

- Actively enforce the law when it comes to tools that do not meet legal requirements and offer more detailed explanations when standards prove ambiguous. Work with other regulatory bodies in doing so.
- Be especially attentive when it comes to processing special categories of personal data. The Dutch Data Protection Authority and the Inspectorate SZW could jointly clarify which data (including health data) are required to comply with the Working Conditions Act, good employment practices, and the GDPR.
- Devote extra attention to addressing workload. Among other things, consider that digital monitoring technology can lead to a gruelling work pace.
- Keep a close eye on the fairness of selection procedures, even when using artificial intelligence.

133 On top of that, employers purchase technology and do not always have a clear understanding of the choices and assumptions underlying the algorithm. The Inspectorate SZW is considering making the users (the employers who use AI tools in the job application procedure) responsible for non-discrimination (see Chapter 5).

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Appendix: List of interviewees

Organisation	Name	Job title
AnalitiQs	Irma Doze	Managing Director
AWVN (General Employers' Association of the Netherlands)	Piet Vessies	Advisor on Strategic HR and Innovation
National Federation of Christian Trade Unions in the Netherlands (CNV)	Leon de Jong	Policy Advisor on Policy and Communication
Crunchr	Dirk Jonker	Founder and CEO
Deliveroo	Elvira Bos Taco van Voorst tot Voorst	Head of Corporate Affairs Head of Operations
Deloitte	Sander Buijsrogge	Manager Analytics and Cognitive
Erasmus University	Annemarie Hiemstra	Associate Professor in Organisational Psychology
Inspectorate for Social Affairs and Employment	Dennis Lanjauw	Project Lead
Nederlandse Stichting voor Psychotechniek (NSvP)	Sonia Sjollema	Director
Netherlands Railways	Jean Paul Lucassen	People Analytics Lead
Tilburg University	Charissa Freese	Senior Researcher, Inclusive HRM
University of Amsterdam / KPMG	Sander Klous	Professor in Big Data Ecosystems for Business and Society / Managing Partner Data & Analytics
Rabobank	Marc Jansen Françoise Rost van Tonningen Tertia Wiedenhof	Head of People Development Head of the Ethics Office Product Owner, People Analytics & Insights
Randstad Groep Nederland	Marjolein ten Hoonte	Director, Labour Market and CSR
Unilever	Jaïri Terpstra	HR Talent Manager & Employer Branding Lead Benelux
Trade Union Federation for Professionals (VCP)	Amerik Klapwijk	Policy Officer

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