# Chapter 6
# Digital transition in the European Union: what impacts on job quality?

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'The crisis consists precisely in the fact that the old is dying and the new cannot be born: in this interregnum, a great variety of morbid symptoms appear.'

Antonio Gramsci

## Introduction

In recent years, the generic term 'digitalisation' has become a buzzword, used to refer to all sorts of diverse, but complementary, technological developments (Box 1, see below). This revolution in the economy and work follows on from the changes which began in the 1970s with the start of the 'Third Industrial Revolution': the introduction of electronics and information and communication technologies (ICT), resulting in increased automation of tasks and complex processes, and significant tertiarisation of the economy. For some, this 'revolution' paves the way for a renewal of European economies, moving towards greater economic growth in a context of unbridled globalisation (European Commission 2017, Van Ark 2014, Rifkin 2014). Others, however have serious questions and fears as to its consequences for the future of work and changes to, or even the erosion of, this work (Degryse 2017a; Méda 2016; ETUI 2016; Valenduc and Vendramin 2016; Dolphin 2015; Huws 2014). This digital revolution is confronting contemporary societies with major social, economic and environmental challenges (Degryse 2017a; Méda 2016). In this constantly changing future, the public authorities have a major role to play in regulating the potential for economic and social growth, and preventing the excesses inherent to the changes to the world of work, production processes and society as a whole.

The European Union (EU), in its work on the digital transition, has focused on the issue of skills and their contribution to the labour market, and on enhancing the digital single market (see Box 2 below). The various strategies and plans have been implemented using a combination of EU measures and actions, such as legislation, policy coordination, financing, strategic partnerships and social dialogue.

Through social dialogue, the trade unions are, by definition, in the front line when it comes to safeguarding and improving conditions for workers affected by the digital transition. Clearly, this is a major challenge for the unions, particularly at a time when change is still subject to European insistence on budgetary austerity and on the simplification/rationalisation of regulation (e.g. REFIT – Regulatory Fitness and Performance –, see Van den Abeele 2015). This leaves limited scope for social dialogue, despite the fact that its importance is repeatedly emphasised (European Commission 2016a; Pochet and Degryse 2016).

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Box 1 **The many facets of digitalisation**

The term 'digitalisation' covers various technological developments:

— the ubiquity of high-speed internet and mobile phones, enabling improved network functionalities and capacity, and leading to the 'Internet of Everything and in everything'
— the availability of "Big Data", datasets too large and complex to be processed and analysed by traditional applications, and thus requiring the development of new technologies
— cloud computing, providing massive increases in storage and information-sharing capacities
— developments in artificial intelligence, robotics and machine-learning;
— additive manufacturing and 3D printing
— progress in methods for systems simulation and integration
— the introduction of digital currencies (blockchains)

Source: European Commission (2016).

A large body of literature exists on the very low quality of jobs created in the service sector through the development of new ways of organising the economy and employment ('uberisation', the platform economy, crowd working and virtual work, etc.), and the major implications regarding the undermining of traditional labour contracts, access to social protection (see Spasova and Wilkens in this volume) and the conventional working environment. Although it is generally agreed that the digital transition affects the various aspects of work in almost all sectors of the economy, the impact of digitalisation on the whole spectrum of quality of work and employment has been studied relatively little. It is, however, a key question for the future of the EU. This chapter looks at the impact of digitalisation on the various aspects of quality of work and employment, highlighting factors of insecurity, intensification, routinisation, alienation and depersonalisation of work, but also the consequences for workers, and especially their exposure to psychosocial risks. The chapter is structured in three sections. It first examines the effects of digitalisation on the various aspects of job quality (Section 1), before presenting the position of the European and national social partners (Section 2), and describing the issues raised by digitalisation for society (Section 3).

## 1. The impact of digitalisation on job quality in Europe

Since the beginning of the millennium, there has been renewed interest in the issue of quality of work and employment, generally seen as a concept with many aspects. Several international institutions, such as the International Labour Organization (ILO), the European Commission (EC), and, later on, the Organisation for Economic Cooperation and Development (OECD), have developed conceptual frameworks to measure job quality using aggregate indices (ILO 2008; European Commission 2001, 2003; OECD 2014; Peña-Casas 2009; Caillaud *et al.* 2012). Nevertheless, little has been done by Member States to move towards the objective of better quality jobs. Although we can see some improvements in certain aspects, the challenges continue to grow (Piasna 2017; Bothfeld and Leschke 2012; European Commission 2014; ETUC 2015;

Box 2 **Digitalisation on the European agenda**

As part of the larger Europe 2020 strategy, various initiatives have been implemented concerning the digital transition of economies and of European societies.

The 2010 initiative *A digital agenda for Europe* contains proposals for action on the longer-term transformations to be brought about by the increasing digitalisation of the economy and society, making the best use of the economic and social potential of Information and Communication Technologies. This is expected to stimulate innovation and economic growth, and improve daily life for individuals and businesses, bringing, for example, better health care, safer and more efficient transport solutions, cleaner environment, new media opportunities and easier access to public services and cultural content (European Commission 2010a).

The issue of skills, particularly digital skills, is addressed at length in the context of the Europe 2020 strategy. In 2010, the flagship initiative *An agenda for new skills and jobs* was designed to raise employment levels in Europe, to improve job quality and create the conditions required for new jobs, while ushering in a more flexible and secure labour market. This agenda is based on four major priorities: better-functioning labour markets, a more skilled labour force, better job quality and working conditions, and stronger policies to promote job creation and demand for labour. For each of these, the Commission has established a set of key actions and accompanying and preparatory measures, intended to add to the national measures available to Member States (European Commission 2010b).

Adopted in 2016, the *New skills agenda for Europe* lists 10 actions to promote the acquisition of skills, particularly digital skills. This agenda is centred around three key work strands: (1) improving the quality and relevance of training and other ways of acquiring skills; (2) making skills and qualifications more visible and comparable; and (3) improving skills intelligence and information, making for better career choices (European Commission 2016b). The need to develop and update skills, particularly digital skills, is also emphasised in the European Pillar of Social Rights.

In 2015, with a view to enhancing the European single market, the Commission adopted a *Digital single market strategy for Europe*. This is built on three pillars: 1) better access for consumers and businesses to online goods and services throughout Europe (e-commerce, preventing geo-blocking of intra-European websites, modernising copyright law, simplifying VAT regimes); (2) creating the right environment and fair competition conditions for innovative digital networks and services to flourish (telecommunications and media, online platforms, security and personal data); and (3) maximising the growth potential of the European digital economy (data economy, standards, skills, e-government) (European Commission 2015). A mid-term review of the Strategy was published in May 2017. This review found that the EU should pursue its activities in three main areas: the data economy, cybersecurity and online platforms (European Commission 2017a). On the same day, the Commission published the 2017 European Digital Progress Report, which reviews the progress made in the implementation of Member States' digital policies (European Commission 2017b).

Other measures are also set to help strengthen the digital single market. In 2016, the Commission adopted an overall strategy for *Digitising European industry*, including a whole range of EU policies designed to maintain and support a strong, diversified and competitive industrial base in Europe, offering well-paid jobs while becoming more resource efficient. (European Commission 2016c). The *EU eGovernment Action Plan 2016-2020* aims to speed up and enhance the digital transformation of public administrations, to make them more efficient and facilitate the free movement of businesses and citizens. Other measures include the proposal to move to a single digital gateway and the initiative on digital solutions throughout a company's life cycle (European Commission 2016d). Recently, the Commission has also taken measures *enabling the digital transformation of health and care in the Digital Single Market* (European Commission 2018).

ILO 2015). The most recent version of the European job quality index, developed by the European Trade Union Institute (ETUI), confirms this ongoing trend towards a deteriorating quality of work in Europe (Piasna 2017).

The issue of job quality is certainly a main concern, but it is more difficult to agree on a definition of this concept and of the factors affecting it in Europe (Davoine *et al.* 2008). Authors, however, agree on one fundamental aspect: the distinction between intrinsic and extrinsic aspects of work. Intrinsic aspects include working conditions, work organisation, vocational training and skill development, health and safety (see Vogel in this volume) and working time. On the other side are the extrinsic aspects of the labour market in which this work is carried out: type of contract, job security, pay, social protection, workers' rights, etc. In the rest of this chapter, we use the expression 'job quality' to refer to both aspects.

The impacts of digitalisation can be seen at various levels. We must first identify the potential general impacts of digitalisation on the labour market and quality factors (Section 1.1). We will then examine at greater length the effects of this digital transformation on work organisation (Section 1.2) and on workers (Section 1.3).

## 1.1   General impacts on employment and quality factors

Recent literature tends to acknowledge the existence of a link between **digitalisation and increased productivity**. However, this is something still under discussion within the academic community. Workers carrying out routine tasks, replaced by machines, are being reassigned to occupations with higher marginal productivity (Keister and Lewandowski 2016). According to a study carried out for the European Commission, ICT helps tasks to be completed more quickly and efficiently, to replace humans in some manual tasks and to give workers more autonomy and flexibility (ECORYS and Danish Technological Institute 2016). Some authors suggest that increased productivity could lead to higher remuneration and a reduction in working time (Muñoz-de-Bustillo *et al.* 2017). Others highlight less obvious effects, such as the maintenance of wage inequality, since the benefits and disadvantages of productivity affect workers differently (Stacey *et al.* 2017). The general impact of digitalisation on economic productivity is also the subject of disagreement. Valenduc and Vendramin (2016) stress that the introduction of new technology does not always result in an immediate rise in productivity, but that it takes several years to have an impact. Authors indicate that the relationship between technology and productivity still very much depends not only on the level of technological innovations within a company, but also on the – often underestimated – organisational changes made.

Much research has highlighted changes in the **supply of work**, pointing to **risks that human work will be replaced by digital and robotic work**. Frey and Osborne (2013) emphasise the probability that 47% of US jobs will be automated over the next ten years. Bowles (2014) points out that, using the same probability calculations, the risk of job replacement is also high in Europe (up to 60% probability). This risk is

greater, according to these authors, for low-income and low-skilled jobs (Berger and Frey 2016; Bowles 2014). Other authors take a less categorical view: although some tasks may be taken on by machines, the jobs themselves will not necessarily disappear. Such authors state that only 9% of jobs are at risk in European countries, a figure which varies from 6% in Finland and Estonia to 12% in Austria, Germany and Spain (Arntz *et al.* 2016). These differing results could be the result of methodological differences in the importance and combination of tasks and related skills.

In an analysis of jobs in Europe, Eurofound (2016a) suggests an analytical framework to examine the content of the tasks carried out by workers in their occupations. The tasks are first broken down by their nature (physical, intellectual, social)[1]. These tasks are carried out and combined to different extents in different jobs. Looking at how tasks are distributed between job categories, Eurofound (2016a) underlines that tasks do not exist in isolation but are specifically or systematically combined in particular jobs. This has important implications for our understanding of structural change in general, and more particularly of the effects of new technologies (Eurofound 2016a). Digitalisation leads to the emergence of new trades, but also to changes in existing occupations.

Another effect of digitalisation is a **polarisation** between low-skilled and high-skilled jobs. Routine tasks, initially performed by low or medium-skilled workers, are, it is said, more easily automated than non-routine tasks, for which it would be more difficult to replace workers, and which are concentrated in occupations requiring higher qualifications (Black and Spitz-Oener 2007). In decline, medium-skilled jobs are partially being replaced by low-skilled jobs, while the number of jobs requiring a high skill level is still increasing. Medium-skilled workers are therefore tending either to seek jobs requiring lower levels of qualification, or are developing new skills which give them access to higher-skilled jobs (ILO 2015). Polarisation of occupations would then lead to greater polarisation of remuneration, thereby increasing inequalities (Autor 2015).

## 1.2    Impact on work organisation

Digitalisation is affecting the working environment, making it **more flexible**. The time and spatial borders defining the working environment are becoming blurred, thereby undermining the traditional employment relationship. The flexibility resulting from digitalisation can upset work-life balance and generate increased stress (Degryse 2017a; Stacey *et al.* 2017; EESC 2017a). Workers are obliged to be constantly available, ready to respond to requests from their employers; they must be reachable and/or connected at all times. This has led to discussions and/or demands as to the 'right to disconnect' (see Box 3). Workers' health and safety can also be undermined by irregular working times, tight deadlines and the need to be permanently available (Eurofound

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**1.**    Physical tasks can be broken down into those which use capabilities such as strength (tasks requiring physical effort) and dexterity (tasks requiring physical skills and good coordination). Intellectual tasks require skills concerning the processing of information (numerical and/or verbal), or problem-solving ability (information gathering, creativity and finding a solution). Social tasks require skills involving interaction with other people: helping patients or clients, training and supporting others, selling and persuading, managing and supervising (Eurofound 2016a).

2016b; EU-OSHA 2015b). In parallel, increased flexibility gives rise to new contractual arrangements, which, in some sectors, do not always guarantee a sufficient minimum number of working hours or a fixed wage (For quality! 2015). The flexibility inherent to digitalisation generates risks of **work intensification**, as a result of various factors such as information overload. This can be so extreme that workers find it difficult to filter and process important information (Valsamis *et al.* 2015; EU-OSHA 2016). Digital tools, moreover, may enable heightened real or perceived **monitoring** of workers and their performance (EU-OSHA 2016; Valenduc and Vendramin 2016; Degryse 2017a).

Digitalisation has brought many changes in the skills necessary and methods used to implement the tasks which make up work, in many cases making work **more routine**. No longer used solely for repetitive manual tasks, ICT is increasingly used in analytical tasks requiring intellectual skills such as decision-making, information management and problem-solving. This is done using digital tools able to gather and process complex sets of data, perform calculations and plan tasks quickly and accurately. In addition to routine analytical and calculating tasks, ICT can also provide support to more complex analytical thought processes in professions such as medicine (ECORYS and Danish Technological Institute 2016).

With the growing digitalisation of European economies, **the development of qualifications and skills** is generally presented, particularly by the European Union, as an urgent need. Emphasis is placed on the acquisition of digital skills in response to present and future needs of the digitalised economy. Skills also need to be updated in jobs in the more traditional economy, as do the skills of jobseekers to heighten their employability (Valenduc and Vendramin 2016; European Commission 2015). One in two workers, it is said, do not have the skills needed to use ICT efficiently (OECD 2016a; EESC 2015). Three types of skills are needed and should be promoted: specialised skills (such as application development), generic skills (such as the use of technology at work), and complementary skills (such as information-processing and problem-solving) (OECD 2016b). Individuals, however, also need basic digital skills to efficiently use digital interfaces, increasingly necessary as the main way for users/clients to access services.

The polarisation of the labour market resulting from digitalisation heightens the need for low- and medium-skilled workers (the most vulnerable) to enhance their skills so that they can be considered for higher-skilled jobs (Valsamis *et al.* 2015). Education, lifelong learning and vocational training systems, with input from the social partners, play a key role in the acquisition of the necessary skills. Digitalisation itself can provide very powerful educational tools and vectors to transmit and share knowledge (European Commission 2015). Nevertheless, given the speed of technological change, it is difficult to clearly identify which skills will be needed in the future (OECD 2016b). Not everyone will work in the digital economy, and even if human work is taken over by intelligent machines, social and emotional skills will, for a long time, remain the prerogative of humans, particularly in the field of personal care services, while machines and digital processes will increasingly perform the tasks requiring physical and intellectual skills.

It is, however, difficult to transmit these social and emotional skills through education and training systems.

## 1.3    Impacts on workers

Digitalisation can have serious impacts on **workers' mental and physical health**. The European Agency for Safety and Health at Work has identified positive and negative effects (EU-OSHA 2015a). On the positive side, teleworking can, it says, cut commuting, thus reducing accident risks. The use of new technologies can also reduce the risks posed by hazardous environments as well as limiting repetitive monotonous tasks. ICT makes it easier to monitor the health of workers, particularly those carrying out dangerous tasks. They are an excellent way to improve communication of occupational health and safety practices to workers and to train managers and workers. The Agency, however, also lists a good number of negative effects of digitalisation, both physical (such as physical inactivity and musculoskeletal problems) and mental (heightened psycho-social risks).

New technologies and greater flexibility can result in an excessive number of working hours, work overload, feelings of isolation, increasing work pressure and ultimately engendering extreme work stress and burnout (EU-OSHA 2015a). The risks are particularly linked to the emotional and cognitive stress of having to be permanently available and connected, and to the loss of, or reduced interaction with, colleagues and superiors (EU-OSHA 2016). In the personal care sector, a sector with strong growth potential, difficult to relocate and relatively well protected from the risk of replacement by automation, digitalisation nevertheless introduces greater distance between the worker and the subject of his/her work, the person cared for. This distancing can potentially generate stress and loss of motivation.

The flexibility made possible by digitalisation, in terms of location/time, can be perceived as a way for workers to better reconcile their **private and working life**. This flexibility, even if it is not always wanted by workers, does allow for better working arrangements, particularly for women and older workers (Valsamis *et al.* 2015). Nevertheless, for female workers wishing to combine their non-work and work aspirations, this increased flexibility can aggravate inequalities in the distribution of home tasks, as men tend to remain at work longer (Perez 2017; Valenduc and Vendramin 2016). The work-life balance can also be undermined by factors such as work intensification, non-standard hours and the need to be permanently available (Degryse 2017a).

Digitalisation can also generate feelings of **alienation and depersonalisation** of work. It can result in a loss of control, both over the content of the tasks to be performed and over working processes and methods (ECORYS and Technological Danish Institute 2016; Eurofound 2016b). The use of technological tools can also put up a barrier between workers and users. In the service sector, for example, increased ICT use means that workers remain behind their computers, deprived of social contact. In a joint statement on the opportunities and challenges of digitalisation in local and regional administrations, the European Federation of Public Service Unions and the Council of European Municipalities and Regions highlighted the problem of depersonalisation,

stating how important it is to identify how workers feel about the loss of personal contact with clients after the introduction of new technologies (EPSU-CEMR 2015).

Training and skill development linked to the digital transition can be seen as factors aggravating **inequalities**. The use of certain technological tools or intelligent machines can indeed result in deskilling (Degryse 2016). Moreover, the trend towards labour market polarisation is increasing the need for low- or medium-skilled workers to develop their skills to heighten their employability. The stakes seem even higher for certain categories of workers, such as older workers or workers without a post-secondary educational qualification (Valsamis 2015). The European Economic and Social Committee (EESC 2017a) emphasises, on this point, that older workers must be given access to training to prevent them being sidelined from the labour market.

Technological developments and the emergence of new forms of work also reinforce gender inequalities. Analysing the task content of jobs, Piasna and Drahokoupil (2017) have shown that women who are already performing routine tasks more regularly than men, even in a similar occupation, are also at greater risk of seeing their tasks automated. Flexible forms of work, moreover, and the growing demands for workers to be available around-the-clock, discriminate between workers, accentuating the unequal division of unpaid labour and weakening women's bargaining power vis-à-vis their employer. Peña-Casas and Ghailani (2011) have shown that the imbalance in income from work within a household, notably due to the fact that they more often have part-time work, means that women are at greater risk of becoming working poor.

## 2.    The social partners and digitalisation: actions and positions

The European Economic and Social Committee (EESC) notes in its September 2017 opinion that digitalisation and its effects on work should be a priority at EU level and should become a central component of social dialogue. In this regard, the Committee recommends monitoring of developments, trends, threats and opportunities linked to digitalisation, as well as their impact on professional relationships, working conditions and the social dialogue. It also recommends improving the efficiency and relevance of social dialogue given the changes in the world of work. Topics which should be addressed in social dialogue include employment, lifelong learning, particularly vocational training, job transitions, working conditions and pay, social protection and the sustainability of social protection funding (EESC 2017a). This section briefly describes the positions and initiatives adopted to this effect by the European and national social partners.

At **cross-industry** European level, the employers and trade unions have issued, separately and jointly, several statements on issues related to digitalisation. Representing European employers, BusinessEurope emphasises in its 'Recommendations for a successful digital transformation in Europe' the need to adapt labour markets and work organisation in order to leverage the maximum potential of digitalisation (BusinessEurope 2015).

The European Trade Union Confederation (ETUC) first underlined in 2015 that digitalisation was not simply a question of technology and markets, but that it was also important to ensure a fair transition from traditional jobs to digital jobs in both the industrial and service sectors. This will require the active participation of the unions on issues linked to job quality (ETUC 2015 and 2016). In 2017, the ETUC proposed launching negotiations on digitalisation with the European employers' organisations, stressing the need for trade union action. It also called for an exchange of information and experience on known approaches and announced its intention to create a new forum for dialogue with digital platforms (ETUC 2017).

At the March 2016 tripartite social summit, the European social partners adopted a joint declaration on digitalisation, stating that 'public authorities and social partners at various levels need to assess how best to adapt skills policies, labour market regulations and institutions, as well as work organisation and information, consultation and participation procedures, in order to derive maximum benefits for all from the digital transformation' (ETUC *et al.* 2016)[2].

At **sectoral level**, the fears provoked by the rapid development of the platform economy and the resulting unfair competition it could cause have led several European sectoral federations to tackle the issue of digitalisation[3]. The texts adopted in this context are neither framework agreements nor collective agreements, but rather common positions or declarations of intent. They constitute a first, necessary step in the creation of a shared vision by the social partners of the social issues raised by digitalisation, even though employers and unions, and different sectors, still have somewhat different concerns. The topics addressed reflect a quasi-consensus on issues related to vocational training and upskilling of workers.

The **national social partners** have also, in recent years, addressed the issue of digitalisation. In most Member States, unions have launched initiatives on digitalisation: studies, analyses and conferences, even collective bargaining. In the following sections, we shall give just a few examples of these, without trying to list them all[4].

In the Belgian 2017-2018 Cross-Industry Agreement[5] (concluded on 2 February 2017), the social partners decided to examine what measures should be taken to ensure that digitalisation and the collaborative economy lead to further growth, employment and entrepreneurship, and sustainable social security (CNR-CNT 2017). In Denmark, the social partners have published analyses and reports, commented in the media on the impact of digitalisation, launched dialogues with political departments and parties, and taken part in European fora on this issue (Ilsøe 2017). In Germany, the main discussion

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**2.** Following the Trade Union Forum on Digitalisation, held in Paris in February 2017, the trade union advisory committee to the OECD published a series of recommendations on how to address the challenges linked to the rise of the digital economy, including some on the question of job quality (TUAC 2017).

**3.** Transport (ETF and IRU 2014), hotel and catering (EFFAT and HOTREC 2015), insurance and financial services (AMICE, BIPAR, Insurance Europe, UNI-Europa Finance 2016), the metal sector (IndustriAll and CEEMET 2016), chemical sector (IndustriAll and ECEG 2016), public services and local authorities (EPSU-CCRE 2015).

**4.** For a broader overview, see Degryse 2016.

**5.** http://www.cnt-nar.be/INTERP-AKKOORD/IPA-2017-2018-BIL.pdf

is about codetermination rights. Employers see no need to amend the current legislation, while the trade unions are calling for greater employee participation, with improvements to the rights of works councils and greater influence on the changes which come with greater digitalisation (Ilsøe 2017; Eurofound 2017).

The social partners in several European countries have joined in the dialogue launched by governments on the challenges and issues linked to digitalisation. The German and Swedish governments have set up commissions on digitalisation (Arbeiten 4.0 in Germany and the Swedish commission on future jobs), in which the social partners are involved (Ilsøe 2017). In France, five trade union and employer representatives were involved in drafting the *Mettling report*, setting out the stances and demands of the social partners, as well as 36 recommendations covering aspects such as job quality, training, reclassification and the right to disconnect (Mettling 2015). In 2016 in the Czech Republic, the Trade Union Confederation of Bohemia-Moravia (ČMKOS) took part in discussions in the Economic and Social Council on digitalisation and automation (Eurofound 2017).

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Box 3 **The right to disconnect**

— In France, the right to disconnect, enshrined in Article 55 of the labour law, came into force on 1 January 2017. It obliges companies with more than 50 workers to negotiate, with the social partners, 'provisions to regulate the use of digital tools, in order to ensure observance of rest time and leave, as well as of personal and family life'. If no agreement is reached, the employer has to prepare a unilateral charter (Allen & Overy 2017).

— In Italy, the right to disconnect is not seen as a general right, but only applies to a more restricted category of subordinate work known as 'lavoro agile', which could be translated as 'flexible work' (law no. 81/2017 of 10 May 2017). The right to disconnect must be included in a broader individual agreement between the employer and the worker setting out the arrangements for the 'lavoro agile', notably rest times and the technical and organisational measures necessary to ensure that the worker can be disconnected from the technological/digital instruments and tools used to do his or her work (Ludicone 2017).

— In Germany, company-level agreements have been concluded between unions and employers in the large automotive companies. In January 2014, the German car manufacturer BMW concluded an agreement with its works council stipulating that all employees can record time spent outside the employer's premises as working time; this means that workers replying to emails after the end of their day's work can be paid for this extra time working. Employees, moreover, are encouraged to agree on set 'accessibility times' with their supervisors (Eurofound and ILO 2017).

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Experiences in some Member States show how trade union measures have evolved and new rights have been acquired thanks to collective bargaining on digitalisation. The right to disconnect recently established by law in France and Italy, or in company agreements in Germany, is an excellent example of this (see Box 3). There are, however, other examples too. The first agreement on digitalisation to be concluded in Europe was signed in France in 2016 between the social partners in a telecommunications group; this agreement, moreover, included the setting up of a committee with the social partners

to try and anticipate the new skills which workers will need due to digital developments (EESC 2017a). In Italy, digitalisation has led to the emergence of new collective bargaining subjects: work-life balance, excessive stress and work intensification due to technological devices, training opportunities and participation in decision-making. In November 2016, when the metalworkers' collective agreement was renewed, a right to training was introduced (EESC 2017b). In Germany, collective agreements have been concluded mainly in larger companies aimed at protecting workers against redundancies resulting from technical progress and automation (Rationalisierungsschutzverträge). For example, the union concluded an agreement with Telekom (2015) to resolve job loss and retraining issues due to digitalisation (Ilsøe 2017).

With regard to the platform economy, national trade union responses have tended to take three forms: legal action, provision of services and the creation of new organising forms. In the United Kingdom, at the initiative of the trade unions, legal action was taken against Uber, with the courts reclassifying drivers presented by the platform as 'self-employed' as workers. The German metalworkers' union, IG Metall, has created FairCrowdWork Watch, an information website with a system for comparing rates, an assessment of platforms and legal information. The site is linked to a telephone hotline. Some large national unions, such as the General Municipal Boilermakers (GMB) in the United Kingdom and IG Metall and Vereinte Dienstleistungsgewerkschaft (ver.di) in Germany, have directly defended the rights of platform workers, and have sometimes decided to include in their ranks workers who, legally-speaking, are self-employed. In other cases, these workers have set up their own organisations – either a union (e.g. the Independent Workers Union of Great Britain), or an association or cooperative (Freyssinet 2017). In Belgium, Smart, the Société Mutuelle d'Artistes (Shared Society for Artists), also covers on-demand delivery and transport workers from the platform economy. It arranges working contracts for Deliveroo riders and represents their interests. It has signed an agreement with Deliveroo and negotiated with the platform to obtain better wages for the riders[6] (Vandaele 2017).

A growing number of unions, moreover, have managed to obtain proper working arrangements for digital platform workers, with collective representation and collective bargaining. In Vienna, for example, the Foodora delivery riders, with the support of the Vida trade union, have set up a works council. In Germany, Delivery Hero, an on-line meal delivery service which owns Foodora among others, signed an agreement with the European Federation of Food, Agriculture and Tourism trade unions (EFFAT) in April 2018, whereby the works council and employees are represented on its supervisory board. In Denmark, the trade union 3F announced the conclusion of the world's first collective agreement in the platform economy with Hilfr.dk, a platform offering cleaning services for private houses (Vandaele 2018).

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6.   However, this joint protocol became null and void when Deliveroo unilaterally changed the employment status of the couriers to that of 'independent contractors'. As a result, a number of riders are exploring the possibility of setting up a platform cooperative (Vandaele 2017).

## Concluding comments: some future issues

The changes in the quality of work and employment brought about by the ever-increasing use of the digital tools and methods described in this chapter show clearly that major developments are underway. These transformations will, at least in part, shape the future world of work, bringing with them both risks and potential benefits with regard to job quality. We shall consider two of these changes, on which there seems to be agreement among both academics and the social partners.

Firstly, digitalisation, aside from its potential benefits, is partly responsible for the increased exposure of European workers to psycho-social risks by making work more flexible and more intense. It also brings other risks. Negative phenomena such as stress or burn-out can be aggravated by the need, enhanced by digital tools, to be always connected and available; the emergence of / call for a new workers' right, the right to disconnect, is significant in this regard. A recent OECD document insists on the vital importance of job quality and its positive influence on workers' health as a key factor in increasing productivity, and therefore on the need for European policies to focus on improving job quality (Arends *et al.* 2017). Healthy workers are not only more productive, but also a lesser burden for social protection systems, during and after their working lives.

Secondly, the EU is essentially promoting, as the best way to prepare for forthcoming changes, teaching and training to develop digital skills, and their contribution to improving the quality and adaptability of the workforce. Is this, however, sufficient? Probably not, in a context of heightened future competition between humans and 'learning machines'. We have already underlined that the question of the impact of digitalisation on work and job quality should be approached in terms of the skills used to perform the tasks making up an occupation. Many occupations involve not only physical and intellectual skills, but also social skills – interaction skills –used across-the-board by the workers involved in completing the tasks, particularly in the field of personal care services. In the future, it could be crucial to develop and use these cross-cutting skills, as this is probably what will make the difference, for work purposes, between humans and intelligent machines.

It is essential that all social players agree that digitalisation should be used to improve job quality, rather than changing or reducing it. Job quality is still clearly on the agenda of European and national policies and social partners. The European Pillar of Social Rights, adopted jointly by the European Parliament, the Council and the Commission on 17 November 2017 (see Sabato and Corti in this volume), covers, in its fundamental principles, the key elements of job quality. The recent Commission initiatives on extending social protection to more workers, including, notably, the 'new forms of employment' generated by the digital economy, are also intended to improve job quality (European Commission 2018). Legislation has a major role to play, at European and national levels, in regulating against the potential adverse effects of the digital economy, but also in protecting and improving job quality. The various aspects of job quality are also key social dialogue issues: social partners will therefore have to develop a shared account of the positive and negative effects of digitalisation in order to come to grips with its consequences for the quality of work and employment.

For us to better understand and contain future changes, however, shared critical reflection should also include all societal and social stakeholders. Like the issue of digitalisation of the economies and of the world, other questions require concerted responses to the undermining of established paradigms. If, in a more or less distant future, digital processes and intelligent machines take over much of human work, we will no doubt have to reconsider an idea which some now describe as old-fashioned, that of a general and fair sharing out of work (De Spiegelaere and Piasna 2017; Méda 2016). If everyone works less, the question which then arises is how to provide everyone with an income allowing a decent standard of living, while enabling continued mass consumption of the goods and services produced by the economy. The idea of a global tax on the non-productive economy, i.e. the financial sector, or on digital tools (e.g. a robot tax) has of course been suggested. However, this idea seems a long way off in Europe, particularly given how difficult some Member States, struggling with 'enhanced cooperation' for more than seven years, are finding it to agree on a financial transaction tax which is really rather low (0.1 % on shares and bonds and 0.01 % on derivatives) (Toute l'Europe 2017). While the Commission's proposal has still not been adopted, it was originally only intended to finance the cost of climate change transition; the idea of a digitalisation tax is not even on the agenda.

The digital and climate change transitions (see Koch in this volume) are likely to be the two most significant changes shaping our future, as is underlined in a recent foresight brief from the European Trade Union Institute (Pochet 2017). In this brief, the author emphasises the need to develop a shared critical narrative, to bring together the (currently separate) understandings and cognitive approaches of those working on these two transitions, and to develop a long-term reflection on the idea of an 'inclusive society, where the economy is a means rather than an end, where work and employment are aimed at human development and self-fulfilment, where inequalities are reduced, and where society takes collective responsibility for social and environmental risks' (*ibid.*: 10). The issue of fair redistribution of resources and wealth should be placed back at the heart of policies, in order to face the challenges of the future.

Astrophysicist Stephen Hawking, when asked what would become of mankind in a future society where intelligent machines would do most of the work, made a similar point: 'If machines produce everything we need, the outcome will depend on how things are distributed. Everyone can enjoy a life of luxurious leisure if the machine-produced wealth is shared, or most people can end up miserably poor if the machine-owners successfully lobby against wealth redistribution. So far the trend seems to be toward the second option, with technology driving ever-increasing inequality'[7].

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7. New Reddit Journal of Science: Science AMA Series, 08/10/2015. https://www.reddit.com/r/science/comments/3nyn5i/science_ama_series_stephen_hawking_ama_answers/cvsdmkv/?st=jerj1dt1&sh=120ac55f

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