



**THE IMPACT OF DIGITALISATION ON JOB QUALITY
IN EUROPEAN PUBLIC SERVICES
THE CASE OF HOMECARE AND EMPLOYMENT SERVICE WORKERS**

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1. Introduction

‘Digitalisation’ has become a ‘buzz-word’ in recent years, encompassing a number of diverse but complementary technological developments. These developments make up the so-called ‘Fourth Industrial Revolution’. This new revolution of economy and work follows the changes initiated since the 1970s through the introduction of electronics and information technology, driving new levels of automation of complex tasks and processes (automation and robotisation) characterising the Third Industrial Revolution.

If for some this ‘revolution’ paves the way for a renewal of European economies on the road to increased economic growth (Van Ark, 2014), less attention has been given to the impact of digitalisation on many aspects of people's economic and social life, and the changes in the nature and content of work. The current lively debates about the very low quality of jobs created in the service sector by ‘uberisation’ or the ‘e-economy’ remind us that while digitalisation is creating opportunities for new jobs and new business, it is also a challenge for some current tasks and quality of jobs.

Through social dialogue, trade unions are by definition at the forefront of the fight to safeguard and improve the condition of workers in this new economic context. Needless to say, this is a significant challenge for trade unions, particularly in a period when change is still being driven by austerity, often with a limited role for social dialogue.

In this context, the EPSU has asked the European Social Observatory (OSE)¹ to carry out an exploratory study on the impact of digitalisation on the content and quality of jobs in two sectors covered by EPSU: Health and Social Services, examining the Home-care sector, and Local and Regional Government, looking at the Public employment service sector.

The general objective of this research is to analyse the impact of digitalisation on the job quality of public service workers, and the challenges faced by trade unions regarding the increased digitalisation of work. The detailed methodology of the research is presented in section 2.3 of the report.

The research focus on two specific sectors: the Home-care sector (HC) and the Public employment services (PES) sector. The outcomes of digitalisation for workers in these sectors and the changes introduced by the utilisation of digital tools in their daily work are examined in four countries (Spain, France, Italy, the UK), with the active collaboration of trade unions from these countries. Moreover, as the research intends to scrutinise the impact of digitalisation on job contents and job tasks, the focus is on specific occupations, such as home-care workers in the HC sector and ‘job counsellors’ in the PES sector.

The main aim of the research is to explore to what extent new technologies are changing the way people work in these sectors, with a focus on the changes introduced by the increasing utilisation of digital tools and processes in job contents, tasks and diverse aspects of work, thus providing a wider understanding of job quality. This includes features such as working conditions, work organisation, working time, health and safety, learning and training, quality of contracts, etc. The research also

¹ The authors would like to thank Tamsyn Randall, from Brigham Young University (USA), for her valuable contributions to the desktop research in the project.

investigates the outcomes of digitalisation for workers themselves, according to their characteristics (gender, age, education, etc. and considers aspects such as their physical and mental health, their career and work life prospects, their options for combining professional and social/family life and their access to and guarantee of social rights (social protection) and workers' rights.

Another part of the research concerns the trade unions in these sectors. The challenges that digitalisation of work introduces for trade unions are discussed with the unions of the two sectors in the countries under scrutiny, as are their reactions to dealing with these challenges in the framework of social dialogue. Positive practices in the matter are also presented. Recommendations are formulated concerning possible ways to improve workers' conditions and rights as well as to improve social dialogue and preserve workers' rights.

After this introduction, a first chapter is dedicated to explaining the main concepts involved in the study, the conceptual model structuring the research and the methodology used (chapter 2). The following chapter presents the results of the desktop research and the findings from the case studies in these two sectors from the four countries (chapter 3). The positions and actions of the trade unions regarding the digitalisation of work are discussed in the next chapter, as well as their practices for addressing the challenges induced by digitalisation of work (chapter 4). The conclusions of the research are presented in chapter 5, while chapter 6 contains recommendations to stakeholders and authorities.

2. Conceptual frameworks and methodology of the research

This chapter will first specify the key concepts used in the research, namely digitalisation, job quality and task contents, according to the skills and methods used (section 2.1.). These concepts are then used to define and illustrate the conceptual model applied (section 2.2.). Finally, the detailed methodology for the exploratory research is described (section 2.3.).

2.1. Definition of main concepts

2.1.1. Digitalisation

As stated in the introduction to this report, the notion of ‘digitalisation’ encompasses a range of diverse but complementary technological developments, making up the so-called ‘Fourth Industrial Revolution’ (Schwab, 2016). Digitalisation refers to a complex array of technologies, some of which are still at their early stages².

To keep it simple, in the framework of this research **digitalisation refers to the use of tools converting analogue information into digital information**. This results in the increased presence and use of connected databases and scheduling tools, in the form of software applications for devices such as computers, tablets or smartphone apps. We also consider some other aspects of the introduction of new technologies, if relevant to the occupations considered in the report: robotisation/automation (for example robots to help lift people) or artificial intelligence (for instance data processing).

2.1.2. Job quality

In the context of this research, the quality of work and employment is understood as a multidimensional concept, rather than one focused on isolated or loosely interconnected aspects. This wider multifaceted approach was noticeably developed by international institutions. The issue of the quality of work and employment, understood as a multidimensional concept, has been gaining ground since the beginning of the millennium among international institutions and bodies.

In launching its agenda on "Decent Work", the United Nations, and particularly the International Labour Organisation (ILO), initiated the thinking on this essential aspect of work (Ghai, 2003) and developed a conceptual framework with indicators, under the auspices of the UN institutions in charge of employment statistics (UNECE, 2015). Decent work, and its measurement, has since been fully included at the political level in the Millennium Development Goals, a central global strategy of the ILO and the United Nations (ILO, 2008).

At the European level, the Lisbon Strategy, launched in 2001, set as an overarching objective for the EU the need to create not only more jobs but better jobs. This resulted in on-going work to develop a formal understanding of quality of employment in the EU. Examples of this are the set of job quality

² Presence of high-speed ubiquitous Internet, increased functionality and capacity of the network, leading to the “*The Internet of Everything*”; Availability of data sets that are so large or complex that traditional data processing applications are inadequate (*Big Data*) and of the technology capable of analysing them; *Open Cloud* and Cloud computing; Developments in Artificial Intelligence, robots, and machine learning; Additive manufacturing and 3D printing; Advances in simulation methods; Advances in systems integration; *Blockchain* (technology underpinning the digital currency Bitcoin - a technology that permanently records transactions in a way that cannot be erased later but can only be sequentially updated, in essence keeping a never-ending historical trail) (European Commission, 2016).

indicators developed by the European Commission (European Commission 2003 2001) and the Employment Committee (EMCO) in the framework of the European Employment Strategy (European Commission 2014a; Peña-Casas 2009; Davoine et al. 2008). The European Foundation for the Improvement of Living and Working Conditions (EUROFOUND) has carried out significant research on the conceptual aspects and outcomes for workers of job quality. EUROFOUND has been working on the quality of work and employment since 2002 and has continued its work ever since (Eurofound 2012 2005 2002). In particular, it has moved the notion towards an approach taking account of work sustainability over the course of the working life and beyond (Eurofound, 2015). Quality of employment remains among the EU's objectives as set out in the Europe 2020 Strategy, although progress in this area seems essentially rhetorical, with a predominant focus on the supply-side aspects of labour markets and quantitative employment growth, rather than increasing job quality (Piasna 2017; Bothfeld and Leschke 2012). Currently, there is no concrete action plan or policy to improve job quality in the EU. On the contrary, the development of the so-called “e-economy”, praised for its economic potential, has given rise to serious concerns about the very low quality and sustainability of the jobs created (Degryse 2017; Valenduc and Vendramin 2016). The recent proclamation of the European Pillar of Social Rights (EPSR), encompassing among other things the various dimensions of job quality, may be seen as a positive step towards better job quality in the EU, although this remains unclear at the moment (Rasnača, 2017).

More recently, the Organisation for Economic Co-operation and Development (OECD) has followed the path of other international institutions and worked on the development of job quality measurement (OECD, 2014).

This increased attention from international institutions to the qualitative dimension of work has been accompanied by various contributions from academia (Muñoz de Bustillo et al. 2011; Guillén and Dahl 2009; Gallie 2007; Green 2006) and European stakeholders (Leschke et al. ,2012). For example, the European Trade Union Institute has, since 2008, developed a European Job Quality Index (Leschke et al., 2008), the latest version of which was brought out recently (Piasna, 2017).

We will not return in detail here to these various conceptual frameworks, but will nevertheless retain that they concur in emphasising a number of fundamental dimensions of a qualitative approach to work. An essential distinction is drawn in all these conceptual frameworks between the intrinsic aspects of the job itself (working conditions, health and safety, etc.) and the extrinsic aspects of the labour market in which these jobs take place (contracts, regulations, industrial relations and workers' rights, etc.). A formal distinction is thus made between quality of jobs and quality of employment. Nevertheless, in order to simplify the reading, we will refer to these two aspects under the uniform term of 'job quality' in the remainder of this report.

The dimensions of job quality that will be considered in relation to the research on the impact of digitalisation at an occupational level are the following:

Table 1: Job quality dimensions and research topics

Job quality dimensions	Topics
Working conditions	- Physical environment of work, tools
Work organisation	- Methods - Pace of work - Routine tasks - Co-execution and co-operation with colleagues - Scheduling and coordination of tasks - Monitoring, evaluation, possible sanctions or bonuses related to task execution
Working time	- Total hours of work - Distribution across total working time - Rest periods - Commuting times - Work schedules
Health and safety	- Physical health: musculoskeletal disorders ... - Mental health: psychosocial risks - Exposure to risks in the execution of tasks, work-related accidents and diseases
Skills and training	- Improvement or degradation of learning at work, learning methods - Prospects of upgrading existing skills - Development of new skills - Adequate and sufficient training
Earnings	- Impact on wages - Bonuses and premiums
Contractual arrangements	- Nature and form of employment contracts - Balance between temporary and permanent contracts - Or part-time and full-time contracts - More precarious work status (temporary agency work, (subordinated) self-employment)
Rights	- Access to social protection rights (sickness, invalidity, pensions ...) - Possibilities to reconcile work and social/family life - Changes to fundamental rights of workers, such as right to association and representation, or to information and consultation

Of course, all these job quality dimensions are intertwined and may not necessarily be the object of noticeable changes due to digitalisation, especially when considered at an occupational level.

2.1.3. Task contents

A specific and challenging aspect of this research is the emphasis on the experience of workers themselves, in particular in specific occupations (homecare workers and job counsellors), by considering their assessment of the impact of digitalisation on the tasks involved in their daily work.

In a recent analysis of European jobs based on the tasks carried out by workers in their occupations, Eurofound proposed an analytical framework of task contents that is useful for the purpose of this project (Eurofound, 2016a). Tasks are broken down by their nature (physical, intellectual, social), the

forms of work organisation they imply (autonomy, teamwork, routine) and the tools utilised (machines, information and communication technologies).

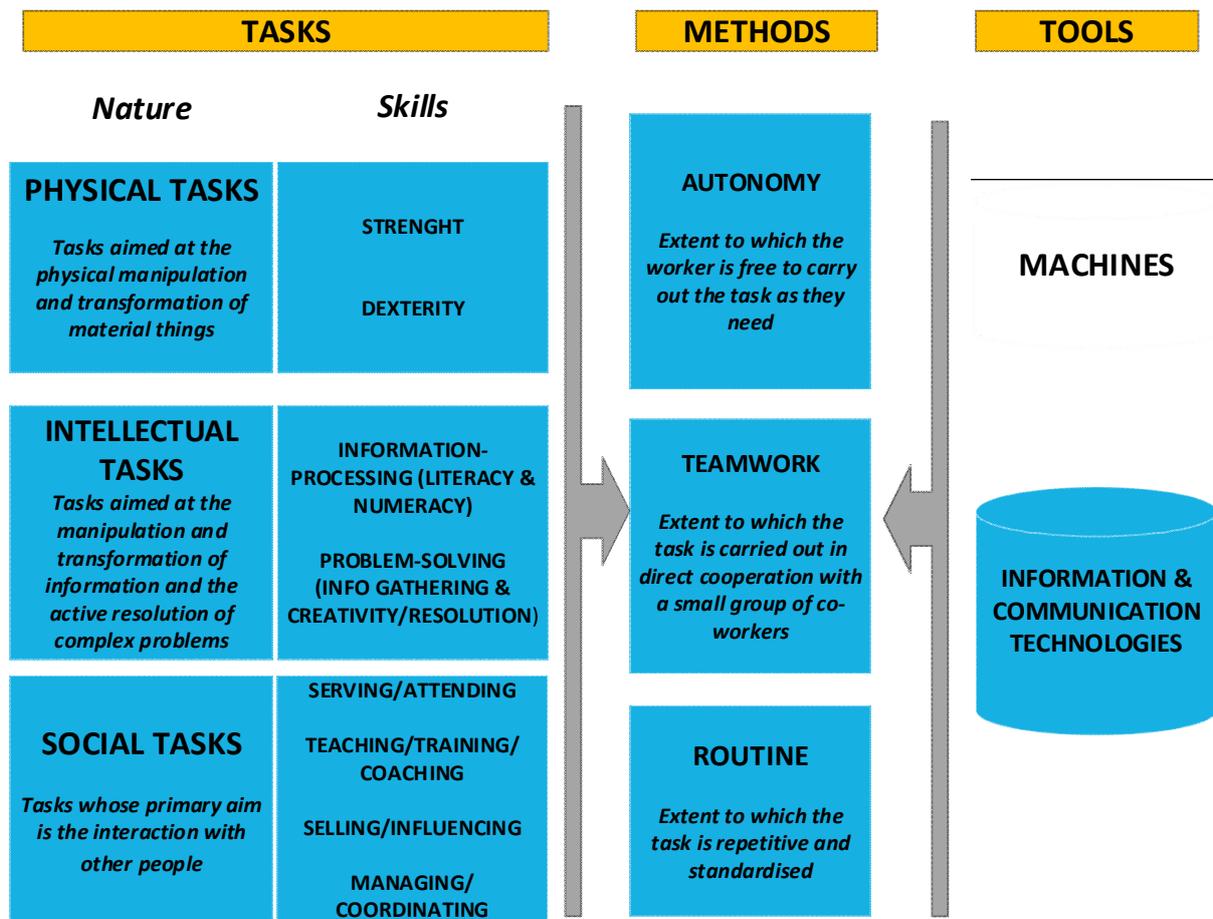
Examining the distribution of tasks across European job categories, the analysis provided in the report shows that **the different categories of tasks in the framework tend to bundle together in systematic ways**. Intellectual and social tasks tend to go together, with some exceptions (such as serving and calculating tasks). Physical tasks tend to be contrasted with intellectual tasks, again with some exceptions (for instance, dexterity often goes together with technical literacy; and problem solving is relatively high even for physically demanding jobs). Physical tasks tend to be associated with the use of machines and routine task methods (both in terms of routine and standardization), whereas intellectual literacy and numeracy tasks tend to be associated with the use of ICT and a relatively high degree of standardization (not repetitiveness).

Most of the variation in task content and methods takes place within rather than between jobs. The overall significant increase in the use of digitalisation at work is almost entirely explained by within-job developments. In other words, the massive increase in ICT use is not due to an increase in the share of ICT-intensive occupations, but rather to a general increase in ICT use in most service occupations.

The fact that tasks do not exist in isolation, but are specifically and consistently combined, or bundled, into particular jobs, has very important implications for our understanding of structural change in general and the effect of technology in particular. If task input could actually be bought and sold in the labour market, the effect of an innovation affecting a particular type of task input could be almost immediate (requiring just the time necessary to adapt existing productive structures). But tasks are put into bundles, which are then advertised as jobs, for which workers who have been trained for those bundles must be hired in order for them to be carried out within an organisational structure. This all means that the effects of technical change are mediated by a multitude of factors; inevitably, there will be a very significant degree of inertia in terms of structural change (Eurofound, 2016a).

The detail of this analytical framework is illustrated in the figure below.

Figure 1: Framework for a task-based analysis

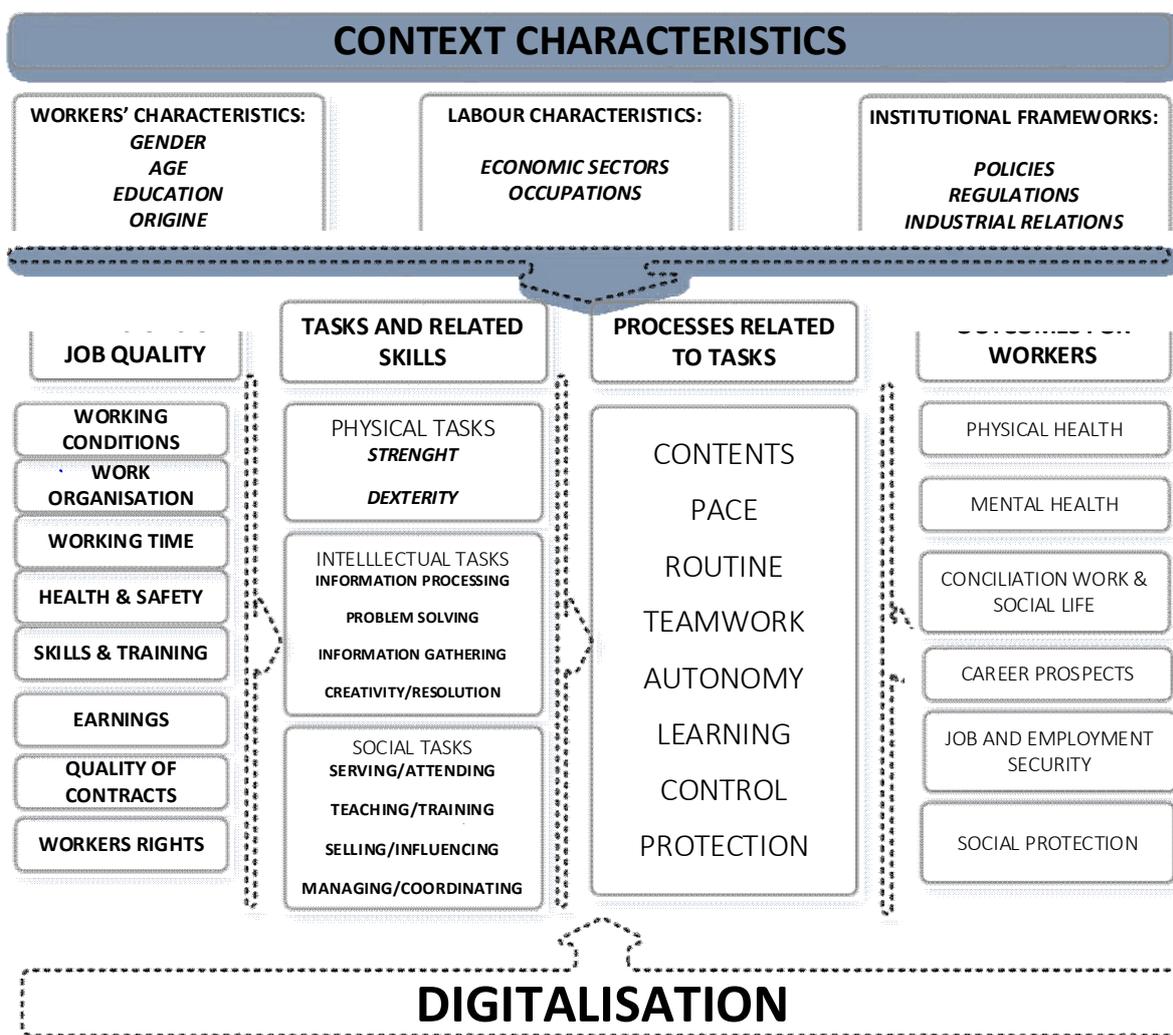


Source: own elaboration based on Eurofound 2016a.

2.2. Conceptual framework of the research

From the diverse understandings of the main elements of the research, we can present the conceptual model used here. This framework is illustrated in the figure below.

Figure 2: Conceptual framework for the exploratory research



2.3. Methodology of the research

The methodology used in this exploratory research combines two complementary approaches.

In a first step, **desktop research**, following the lines of the conceptual model provided above, was carried out, looking at academic literature and institutional documents related to the impact of digitalisation on job quality and occupational tasks, as well as examining the positions and reactions of trade unions to specific challenges created by the growing digitalisation of the economy and labour in the EU. This is a classic **top-down approach** to shed light on the issues considered in the project.

In a second step, a **bottom-up approach** was taken, to enrich the exploratory research with the assessments of unionists and workers themselves on the tangible outcomes of digitalisation for workers, and the challenges and practices adopted by trade unions to deal with the consequences of digitalisation. In four countries, we focused on the sectors of homecare work and Public employment services, and considered the impact on daily work for specific occupational profiles such as homecare workers and 'job counsellors'.

With the active support of national trade unions, several **focus groups** were organised, bringing together unionists and workers from the two sectors under consideration in this study³. These interactions were structured around two **questionnaires**, translated into the national languages with the assistance of national partners. Firstly, a questionnaire was sent to trade union representatives, to sound out their perceptions of the challenges faced and their practices in addressing digitalisation in their sectors. Optionally, they could also give their opinions on the effects on work and the outcomes for workers. Secondly, a specific questionnaire addressed the concrete outcomes of digitalisation on tasks and daily work, as experienced by the workers themselves. The content of these questionnaires was based on the findings from the desktop research and further discussed with the EPSU secretariat. Moreover, in order to gather as much information as possible, the questionnaires were also sent, through the national trade union partners, to shop stewards and workers not taking part in the focus groups. Both questionnaires and the list of focus groups organised are provided in the annex to this report.

The following table illustrates the results of this information process.

Table 2: Overview of the results of the information-gathering process

Countries	Sectors	Focus groups			Questionnaires				
		Meetings	Place	No. participants	No. quest.: 94 45 PES 49 HC	Trade unionists	Workers	Women	Men
FRANCE	PES	Focus Group	Dijon 02/05/18	7	32	4	27	17	9
	HC	Focus Group	Paris 06/03/18	6	9		9	8	1
SPAIN	PES	Focus Group	Madrid 29/05/18	11	10	10		4	6
	HC	Focus Group	Madrid 28/05/18	5	5	5		5	0
UNITED-KINGDOM	PES*	-	-	-	1	1		0	1
	HC	Focus Group	West Bromwich 23/05/18	10	33**	25	3	17	16
ITALY	PES*	-	-	-	2		2	2	
	HC*	-	-	-	2		2		2

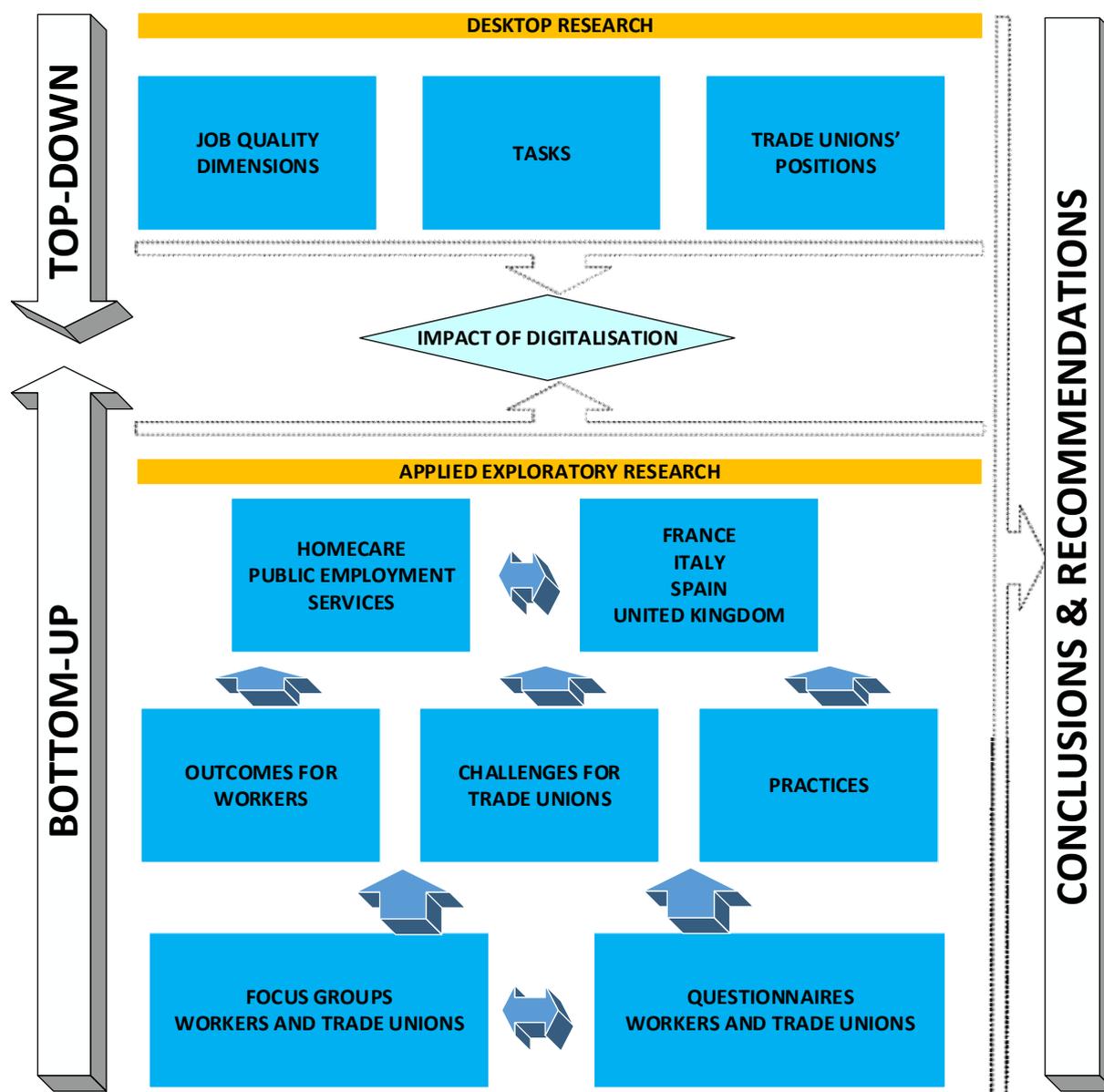
* In these sectors and/or countries no focus groups could be organised for internal reasons.

** In the United-Kingdom, the survey among workers and unionists took the form of a web survey in the whole Health & services sector. More than 350 responses were received, among which 33 were identified as related to the homecare sector.

The following diagram (figure 3) illustrates the methodology and the different steps of the research.

³ We would like to warmly thank the EPSU affiliates in the four countries for their valuable help in distributing the questionnaires and in organizing the focus groups: Maryvonne Nicolle (CFDT, FR), Emmanuelle Périn (CFDT, FR), Fatima Aguado Qeipo (CCOO, ES), David Vasquez (CCOO, ES), Colenzo Jarett-Thorpe (Unite, UK), Sam Mason (PCS, UK), Silvia Candida (CISL, IT).

Figure 3: Methodology of the exploratory research



3. Desktop research on the effects of digitalisation on work

The first section of this chapter contains an overview of the desktop research carried out, on the impact of digitalisation on the various dimensions of job quality (section 3.1.). The second section presents the findings from the case studies in the two sectors and four countries under scrutiny in the research (section 3.2.).

3.1. Impact of digitalisation on job quality aspects

One body of research concerns observed and forecasted **changes in the labour supply resulting from the development of digitalisation**. Certain studies have particularly crystallised the debate on this topic, notably on the scale of job substitution provoked by digitalisation. Focusing on jobs as opposed to tasks, Frey and Osborne predict that up to 47% of US jobs will be lost to computerisation in the

coming decades and that computerisation will mostly replace unskilled labour – particularly in the service sector (Frey and Osborne, 2013). Applying to the EU employment structure this method of calculating the likelihood of substitution, the Bruegel Foundation indicates that the percentage of jobs at risk of substitution by ICT is even higher in Europe than in the US (54% compared with 47%), particularly in Southern Europe where employment in occupations at high risk of substitution is higher (Bowles, 2014). However, other authors seriously challenge the scale of these substitutions, arguing that jobs are bundles of tasks rather than a simple reflection of one kind of task. Even if some tasks are substitutable by machines, this does not imply that the whole job will disappear, as many jobs require a combination of tasks and related skills. According to their findings, only around 9% of jobs are at high risk of substitution by ‘machines’ in the European countries, ranging from around 6% in Finland and Estonia to around 12% of jobs in Austria, Germany and Spain. Countries that have a larger share of employment dedicated to occupations involving face-to-face interaction are less likely to suffer the consequences of the digital revolution (Arntz et al., 2016)⁴. A Eurofound report analysing EU jobs in terms of skills and tasks reaches similar conclusions, underlining that skills and tasks are bundled together, with only a limited number of jobs remaining focused on routine mono-tasks. In other words, as jobs increasingly tend to require various skills, and notably intellectual and social skills, they are not easily substitutable by machines or technology. This is especially true in the service sector, which includes the vast majority of EU jobs. This means that the effects of technical change are mediated by a multitude of factors generating a significant degree of inertia in terms of structural change (Eurofound, 2016a).

Recent literature widely acknowledges the existence of a **correlation between digitalisation and gains in productivity**. However, the extent of this is debated and questioned among researchers. Productivity is linked to job quality because it has the potential to create more non-routine cognitive jobs and because ‘middle income workers performing routine activities, replaced by machines, were induced to reallocate their labour supply in intense non-routine occupations and to perform tasks with a higher marginal productivity’ (Keister and Lewandowski, 2016). Some research suggests that productivity gains will possibly lead to higher wages and lower working hours (Muñoz-de-Bustillo et al., 2017). However, other studies speak of more nuanced effects, such as a perpetuation of wage inequality because the benefits and disadvantages of productivity affect workers differently (Stacey et al., 2017). Digitalisation’s general impact on economic productivity is also disputed. Researchers point out that in the past, innovation and technology have not always led to an immediate increase in productivity and that the effects of implementing digital technologies are not fully realised until several years later (Valenduc and Vendramin, 2016). They also warn that digitalisation will only lead to increased productivity if organisational changes occur at the same time. The research also suggests that organisational constraints of technology adoption are underestimated while the efficiency of the technology is overestimated (Valenduc and Vendramin, 2016).

Current literature is mostly in agreement that **digitalisation has polarised, and will continue to polarise, low and high-skilled jobs and workers in the labour market**. This is because digital technologies replace routine cognitive and manual tasks that are commonly performed by those in the middle of the wage spectrum. However, non-routine manual tasks are often performed in occupations that require low skill and education levels. Because of this, jobs are polarising into tasks traditionally performed by the lowest and highest skilled workers (Black and Spitz-Oener, 2007). In

⁴ For a detailed discussion of these substitution effects see Degryse (2016) and European Commission (2016a).

addition, other research found that there has also been a polarisation in wages. Recently, people at the top and bottom end of income and skill distributions have experienced more wage gains than those in the middle of the scale (Autor, 2015). Thus, job quality is increasingly linked to one's digital skills, which will continue to gain importance in labour markets in the coming years, along with "analytical, interactive, and problem-solving skills" (de Groen et al., 2017). Because of this increased polarisation, some research suggests that systematic inequality will only deepen. Current research varies in its predictions about job loss due to digitalisation, but generally, researchers agree that inequality will rise as the demand for workers with low skills lessens and their economic opportunities become more constrained (Berger and Frey, 2016). The main challenge will be making sure that low-skilled workers are given opportunities to train and retrain (Arntz et al., 2016). In addition to these observations, society is currently more unequal than it has ever been, and low-income families are much less digitally connected than other members of the population. Because of these factors, the future of job quality is uncertain for much of the population (Meyer, 2014).

Digitalisation is often linked to increased efficiency in the workplace. As mentioned above, the productivity of technology is currently disputed, but researchers widely acknowledge the role of digitalisation in increasing the efficiency of manufacturing, organisation, communication, and data usage, among other things. As efficiency increases, job quality is affected in various ways. Research notes that digitalisation has shifted the tasks workers must perform because fewer people are needed to do the same work, which means that simpler tasks are taken over by digital processes. Thus, workers must have higher qualifications and skills (de Groen et al., 2017). A study carried out for the European Commission found that information and communication technology increases the speed and efficiency of jobs, replaces manual labour, and gives workers the ability to be more independent and flexible (ECORYS and Danish Technological Institute, 2016).

According to the European Network of Public Employment Services, the efficiency of the public employment services sector has been heightened by digitalisation. The PES has automated services that give customers access to more and better information. Because PES services are becoming digitalised, workers have more time to help clients in other ways, focusing on their specific needs and capabilities rather than dealing with complicated or time-consuming data searching (Ejler and Sidelman, 2016). Job quality is affected because tasks shift from routine labour to non-routine, cognitive responsibilities. The home care sector has been challenged with resource shortages and financial constraints; research suggests that digitalisation can be a way to increase efficiency through innovation, which will aid in the creation of home-care systems with more favourable working conditions (de Groen et al., 2017).

Research widely suggests that **digitalisation has created more flexible working environments in both temporal and spatial terms.** A survey analysed by the OECD confirms that this is an important factor for many employees working in the platform economy, in part because it creates opportunities for people who could not or would not normally work to enter the labour market on their own terms (OECD, 2016). Flexibility has also been linked to negative side-effects, especially in the sector of public employment services. According to another study by the European Network of Public Employment Services, flexibility in the labour market due to digitalisation means that employees may be hired for short-term projects, which means that employees could be unemployed more often, possibly increasing the workload of PES (Pieterse, 2016). In a similar vein, a study on job quality in the personal care and household sector found that flexible employment contracts may not guarantee

a minimum number of hours, which results in a lack of fixed income (For quality!, 2015). Thus, while the flexibility stemming from digitalisation has been shown to be mostly positive for workers, as long as they are requesting it, there are areas of concern, especially in terms of employment stability.

As an extension of the previous section, research suggests that **the flexibility induced by digitalisation may provoke a disruption of the work-life balance**. Digitalisation may negatively impact workers especially in the digital economy because they must often be available on-demand. In other words, there is a negative side to the increased job flexibility. Research has found that this issue mostly affects platform workers who must quickly respond to job opportunities, whatever the time of day. The blurring of work and home life boundaries resulting from the necessity of always being connected disrupts balance and raises stress levels (Stacey et al., 2017). In an environment of irregular working time, tight deadlines, and constant availability, job quality is compromised because it often leads to health and safety risks for workers (Eurofound, 2016b, EU-OSHA 2015).

Research also indicates that, particularly for workers in the gig or platform economy, **digitalisation has created uncertainty about the guarantee of social protection rights**. Numerous studies cite the negative implications of the digital economy on workers' access to social protection. A study carried out for the European Parliament found that while platform economy workers had high levels of job satisfaction, they were not satisfied with pay levels, job security or their future professional prospects and they generally had limited or no access to social protection schemes. The study suggests that this is in part because there are typically no standard contractual arrangements involved in platform work. They had more difficulty paying bills and the more reliant they were on platform work, the less likely they were to have social protection. Most platform workers who were contributing to a pension scheme were typically also employed elsewhere (Forde et al., 2017).

The increased utilisation of **digitalised tools has consequences for occupational safety and health (OSH)**. The European Agency for Safety and Health at Work identified in a recent report the challenges that digitalisation generates for the physical and mental health of workers (EU-OSHA, 2015). Some positive aspects of the use of ICT tools in work are reported. Teleworking for instance can contribute to well-being at work and the combination of work and private life. As workers are less obliged to be located in the same place, the risks of travel accidents are lower. The use of ICT could also help to remove people from hazardous environments or to better protect them by automating dangerous and/or monotonous repetitive tasks. Additional positive outcomes of connected tools are the new opportunities for communicating good OSH practice, providing good quality training, keeping and sharing records about OSH exposures. However, there are also a significant number of emerging OSH risk areas associated with digitalisation.

First, **several physical risks are linked to physical inactivity**. The use of computers and automated systems at work leads to fixed body postures and physical inactivity at work. Physical inactivity is associated with increased health risks such as coronary heart disease, being overweight or obese, certain types of cancers and psychological disorders such as depression and anxiety. Another important risk for physical health comes from the combined exposure to a mixture of environmental stressors that, taken together, augment the risks of musculoskeletal disorders [MSDs], the leading cause of sickness absence and work disability. The use of connected tools may potentially bring about health and safety risks associated with exposure to electromagnetic fields. The use of mobile

devices that are less ergonomic than desk-top devices could also increase the risks of MSDs (EU-OSHA, 2015).

Second, important **emerging psychosocial risks are also identified in relation with digitalisation of work**. As stressed by the EU-OSHA, flexible working patterns and the 24/7 economy can lead to workers facing increasing workload and task complexity, excessive working hours, feelings of isolation (as personal relations are replaced by virtual contacts) and finding it increasingly difficult to achieve a good work-life balance due, in part, to work pressure but also driven by the 'fear of missing out' syndrome. As a result there is a danger that workers can suffer stress and 'burn-out' and also face increased emotional demands, including violence, harassment and bullying (EU-OSHA, 2015).

Research shows that **digitalisation affects the nature of jobs in terms of skills and tasks**. In section 2.1.3., a Eurofound report is used to provide a conceptual model of the interactions between skills, job tasks and technological tools and methods (see figure 1). This framework is used in the Eurofound study to analyse the jobs in the EU from the viewpoint of the skills and tasks involved. The report underlines that tasks do not exist in isolation, but are specifically and consistently combined, or bundled, into particular jobs; this has major consequences for the understanding of changes in jobs and notably the impact of digitalisation on the transformation of work in the EU. Physical, routine tasks are being replaced by machines, while intellectual and social tasks and ICT use are growing. The distribution of tasks is changing even within the same job or occupational category. The report found that job quality is linked to task content. Physical task content has a clear negative correlation with job quality, whereas intellectual task content has an even stronger positive correlation. The negative association between physical tasks and job quality is particularly strong for amenities and strength, whereas the positive association between intellectual tasks and job quality is strongest for education, literacy and the humanities. Social task content also has a positive correlation with job quality, but this is much weaker than for intellectual tasks (Eurofound, 2016a). Similar findings are listed in a study made for the European Commission on the impact of ICT on job quality, based on a detailed analysis of 12 job profiles⁵ (ECORYS and Danish Technological Institute 2016). The profiles are based on research and interviews with employers and trade union organisations. The research shows that ICT strongly affects tasks and skill requirements. The main findings include the following:

- ICT is increasingly taking over routine, analytical tasks and supporting highly complex analytical thinking;
- ICT tends to increase speed, flexibility, and independence of work;
- ICT tends to increase the differentiation of competence levels among employees;
- ICT affects skill requirements;
- The adoption of digital technologies takes time to become mainstream;
- lack of skills is a challenge to future ICT adoption;
- ICT blurs boundaries between occupations or merges them.

⁵ The 12 occupations analysed in the study are the following: dairy farmer, machine operator, industrial designer, building electrician, transport clerk, car mechanic, police detective, VET teacher, property caretaker, doctor in a hospital, animator, and desktop publisher.

3.2. Positions and actions of trade unions in the field

Trade Unions are key actors in the digital economy and in addressing the future of work. They play a crucial role by ensuring fair wages and a fair distribution of productivity gains, good working conditions and overseeing and managing the effects of outsourcing and displacements due to globalisation dynamics and technological change. As highlighted by the Trade Union Advisory Committee to the OECD (TUAC), Unions contribute to the development of future company strategies and support employee driven innovation and further development of workforce skills. They are also involved in discussing the introduction of new organisational models (including workers' health and safety) and technology through meaningful social dialogue. Trade unions at the national and international level are developing principles, are engaging directly in the digital economy and are participating in the development of policies (TUAC, 2016).

In the same way, the European Economic and Social Committee (EESC) notes in an opinion delivered in September 2017⁶ that digitalisation and its effects on work need to be a priority at European level and must become a central component of social dialogue. In that respect the Committee recommends, on the one hand, to monitor the development, trends, threats and opportunities of digitalisation, as well as their impact on industrial relations, working conditions and social dialogue; and, on the other hand, to improve the effectiveness and relevance of social dialogue amidst changes in the world of work by appropriate means⁷. The EESC identifies the major themes of social dialogue as including questions relating to employment, lifelong learning, particularly vocational training, career transitions, working conditions and pay, social protection and the sustainability of its funding, and income security (EESC, 2017).

This said, the current debate focuses mainly on the proliferation of new forms of employment, and the major implications of challenging the traditional contractual form and the conventional working environment. Although many agree that the digital transition affects different dimensions of work, it must be acknowledged that less attention is given to the quality of employment. Analysing the impacts of digitalisation on the labour markets, Degryse (2016) summarises the social and labour issues for the trade union world in four main points. The first three include the potential loss of jobs, the change of the nature of work, and the development of new forms of employment (mainly crowdworking). The last of these relates to several dimensions of job quality as it concerns the steps to be taken to ensure that digitalisation does not result in polarisation and growing inequality between highly skilled and low-skilled workers, between men and women, young and old, home country and immigrant workers. These issues have been debated by both European and national trade unions (Degryse, 2016).

3.2.1. At European and international level

At cross-industry level, some general issues of digitalisation have been addressed by both BusinessEurope and the ETUC, as well as in a document jointly adopted in 2016.

⁶ 'The role and opportunities of social partners and other civil society organisations in the context of new forms of work'.

⁷ Such as exchanging information, drawing up forward studies, pooling best practice and achieving an appropriate legislative and non-legislative framework.

In June 2015 the ETUC Executive Committee adopted a resolution in the form of a first evaluation of the European Commission's digital agenda (European Commission 2015). For the ETUC, "digitalisation is not just a technological issue or a question of the market, it is also about just transition from traditional jobs to digital jobs in the industrial and the service sector; it is a question of future society and its cohesion. Digitalisation is a megatrend for the world of work one must be involved in shaping" (ETUC 2015). In its 2016 resolution on fair digital work, the ETUC proposed involving trade unions in job quality-related issues such as rules on working time, health and safety issues, qualifications and up skilling, work-life balance, data protection. More specifically, the ETUC demanded, among other things:

- an inclusive transition towards good and fair digital work based on good working conditions,
- the upskill of the workforce and training programmes,
- a safe and secure work environment and a fair employment relationship,
- measures to address the gender gap within the ICT sector⁸.

Other points of particular interest for this report are, on the one hand, the role of trade unions and, on the other hand, that of public services. Trade unions have a role to play in shaping fair and inclusive digitisation of companies, ensuring that workers' representatives regularly scrutinise the introduction of new technologies, internal and external outsourcing. They are invited to use collective bargaining to implement new rights related to digitalisation, to reinforce information, consultation and board-level representation to better anticipate and manage change (ETUC, 2016). Regarding public services, the ETUC speaks of the need to build inclusive and accessible digital public services. Public administrations should have the capacity to support both citizens and workers with digital training and skills and to conduct an assessment of the social impacts of ICT standards on workers, to promote the development of open standards in all identified priority domains. In 2017, the ETUC emphasised the deep potential impact of digitalisation on public services as "next-generation public services will be increasingly delivered through platforms with local and regional authorities acting as intermediaries, connecting people with providers, and maintaining public service oversight of 'collaborative' and even crowd-sourced delivery models that are yet to be imagined". The introduction of digital devices could then become a game changer in fields such as health and social care, public employment services (ETUC, 2017).

From the European employers' side, BusinessEurope in 2015 published a position paper, "Recommendations for a successful digital transformation in Europe". The employers' confederation underlined inter alia the need to assess how best to adapt labour markets and work organisation in order to derive maximum benefits from the digital transformation for business and workers. It recommended seizing the opportunities of digitalisation at the workplace, requiring adaptation to increased work flexibility and skills. It emphasised the need for training and re-training workers and jobseekers to help them keep pace with the progress of technology and develop their employability, and supports the idea of a coherent EU strategy for digital learning, with open educational resources to be mainstreamed across all education and training sectors, so to efficiently contribute to people's education and training (BusinessEurope, 2015). At the March 2016 Tripartite Social Summit, the European social partners (ETUC, BusinessEurope, UEAPME, CEEP 2016) adopted a joint statement on digitalisation, stating that "public authorities and social partners at various levels need to assess how

⁸ As well as a Directive on privacy at work at European level, an EU framework on crowdworking, ...

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". Whether digitalisation will ultimately increase employment will depend on how successfully European enterprises adapt to technological developments, and on the extent to which the EU will be able to create a favourable policy and regulatory environment to safeguard the interests of both enterprises and working people. The social partners called on the EU to address potential digital divides (generational, gender, regional or social) and to ensure that workers are given the chance to adapt and have access to new opportunities, important to ensure broad support for digitalisation in society. They asked the European Commission to underpin the digital transformation of economies and labour markets, and to work together with them, in order to ensure that labour market and skills policies are designed both for enterprises and workers (quality employment opportunities, protection and re- skill / up - skill of those affected by digitalisation).

Digitalisation is also widely debated by trade unions at the OECD. Following a *Trade Union Forum on Digitalisation* held in Paris in February 2017, the Trade Union Advisory Committee to the OECD published a set of policy recommendations for coping with challenges relating to the advancement of the digital economy. The key recommendations aim to support trade union inputs to G20, G7 and ILO discussions on the future of work and digital transformations of economic sectors and societies⁹ (TUAC 2017).

3.2.2. At sectoral level

The first two sectors to have looked at the question of digitalisation at the European level were transport¹⁰ and hotels & catering¹¹, both of which quickly became concerned about the rapid rise of a new platform-based business model (Uber, Airbnb). This model had, they felt, the potential to create new forms of competition deemed to be unfair, as it did not seem to be subject to the same legal, social and administrative requirements as applicable to traditional businesses in these sectors. They were, however, rapidly followed by the insurance¹², metal¹³, chemical¹⁴ sectors as well as the public and local authorities sector in 2016 (Degryse, 2017).

The public services sector seeks to anticipate various aspects of digitalisation of public service provision in administrations, and the future consequences for employment.

The 'EPSU-CEMR Joint Declaration on the opportunities and challenges of digitalisation in local and regional administrations' therefore addresses issues such as information and training of workers, quality of jobs, data protection, etc. The social partners express their determination to work further on the following issues:

⁹ They covered issues related to: the just transition for technological change; the shape of digital innovation processes; quality jobs in digitalised economies; skills development & effective training systems; regulatory loopholes in the digital economy; addressing challenges of work on online platforms; standards for data protection and privacy; anticipation of change; role of trade unions.

¹⁰ <http://www.etf-europe.org/files/extranet/-75/44328/ETF%20IRU%20Taxis%20Statement%20EN.pdf>

¹¹ <https://www.hotrec.eu/wp-content/customer-area/storage/16d75793cb3b4c2d844daa4a90c9d7ca/Joint-EFFAT-HOTREC-Statement-on-the-Sharing-Economy-4-December-2015.pdf>

¹²

<https://www.insuranceeurope.eu/sites/default/files/attachments/Joint%20declaration%20on%20the%20social%20effects%20of%20digitalisation.pdf>

¹³ http://www.industrial-europe.eu/committees/IP/PolPaper/PositionPaper_2015-02_DigitalisationOfIndustry_EN.pdf

¹⁴ http://www.eceg.org/wp-content/uploads/20161122_joint_position_ECEG_iAE_digitalisation.pdf

- to explore the changes to the work process caused by digitalisation;
- to assess the actual benefits enabled by digitalisation for workers and services delivery;
- to consider the information and training needs for various groups of workers;
- to identify how workers feel about the loss of personal/telephone contact with clients after the introduction of digital systems;
- to monitor the incidence of muscular-skeletal conditions in the workplace and of psychosocial conditions in the workplace;
- to implement the monitoring of sickness absence after the introduction of digital systems;
- to identify and facilitate the sharing of examples of good practice in the implementation of digitalisation (EPSU-CEMR, 2015).

As it is a joint declaration, the text aims to encourage stakeholders in the sector to establish a social dialogue structure to benefit workers and employers in local administrations, and not to influence the policies implemented by the European institutions (Degryse, 2017).

In 2016 the EPSU Executive Committee approved a position paper on “Smart Public Services for a Digital Age”¹⁵ which sets out a number of core criteria for fair and inclusive digitalisation. The job quality – related criteria include among others:

- the mainstreaming of gender equality into every aspect of digitalisation; the recognition of a 'right to disconnect' for public service workers;
- the adaptation of the health and safety environment to new work processes brought about by digitalisation;
- the respect of the Working Time Directive and the inclusion of the impact of digitalisation in the European discussions on work-life balance;
- quality training: training must be dynamic, taking into account the different levels of digital literacy in the workforce and, although starting from different levels, aim to bring all workers to the same high standard. Training must be at least as good as in the private sector.

Other criteria are related to the need for collective bargaining and the role of European Social Dialogue in addressing the impact of digitalisation on work organisation, information, training as well as the dissemination of best practices; the creation of worker data protection legislation at EU level to ensure minimum standards for all workers; the need for accrued investment in public services resources to ensure that digitalisation raises and not lowers quality; the consultation of trade unions and workers' representatives on the introduction and use of new technology in the workplace (EPSU, 2016)¹⁶.

3.2.3. At national level in the four countries under scrutiny

At national level governments and social partners have set out to meet the challenges imposed by digital and technological change. In France, a National Digital Council has been set up, and the "Mettling Report" was published in 2015. Trade unions, employers and the public were involved in

¹⁵ <https://www.epsu.org/article/epsu-position-paper-smart-public-services-digital-age>

¹⁶ Comparing the six sectors, there are a wide range of views among the social partners: in the transport and hotel sectors the social partners are most concerned about competition, while social partners in the regional and local authorities prioritise questions of information and consultation. Working conditions and socially-responsible restructuring are a priority in the insurance sector, and health and safety are key issues for the metal and local authority sectors (Degryse 2017).

drafting this report, which set out a number of recommendations that firms are obliged to implement. Italy and Spain¹⁷ have looked at the links between digitalisation and national industry models, especially manufacturing. They have developed an Industry 4.0 strategy (Eurofound 2017).

In **France**, digitalisation issues have been subject to analysis and reflection by the trade unions, since 2015. In March 2015, the minister of labour, employment, vocational training and social dialogue commissioned a report to examine the question of the effect of digital change on labour. For the first time, the issue of labour was specifically targeted. Five trade union and employer representatives (CFDT, CFE/CGC, CGT, FO, and MEDEF) were involved in drafting the so-called 'Mettling report'. The latter identified six forms of impact of this digital change: the massive spread of new work tools; the impact on occupations and skills; the impact on work organisation; the impact on management; new forms of non-salaried work; and managerial staff and their working environment (Mettling 2015). It put forward a set of positions and demands formulated by the social partners in view of the emerging digitalisation of society and presented 36 recommendations mainly, as far as job quality is concerned, related to questions of training, reclassification and reskilling, gender equality, the right to disconnect, etc.

Individual trade unions also launched a series of initiatives. Force Ouvrière (FO) is calling among other things for a right to disconnect, improvement of working conditions, new boundaries between work and family life, regulation of teleworking, while the CFDT focuses on new trade union practices and uses of information and communication technology (FO 2015, CFDT 2015; Degryse 2016). The first agreement on digitalisation in Europe was signed in France in 2016 between social partners within a telecommunications group. In particular, it foresees the creation of a committee with the social partners in order to anticipate the new skills employees will need due to digital developments (EESC, 2017). More specifically, for the first time in the history of Pôle Emploi (the French Public Employment Service), an agreement on the quality of life at work has been in place since April 2017. This agreement, signed by CFDT, CFTEC, CFE-CGC and the General Management of Pôle Emploi, contains several important demands made by the trade unions over several years on topics related to working conditions: forward-planning, training, support for the evolution of activities and technologies by taking greater account of the situation of each employee and Pôle Emploi agent. It constitutes a first step in responding to the impacts of digital technology within Pôle Emploi as jobs are changing and new technologies are becoming increasingly important. The first effects of the agreement concern the widespread use of telework in all Pôle Emploi establishments and the implementation of a right to disconnect¹⁸ (see box 1).

¹⁷ In Spain, the government launched the Connected Industry 4.0 initiative in collaboration with a number of large companies. The aim is to boost the digital transformation of Spanish industry through joint and coordinated actions in the public and private sectors. A related platform brings the social partners together to involve them directly in the implementation of the national plans and strategies related to digitalisation. As it is clear that digital transformation will affect the traditional economy and employment models, the social partners stress that any actions must be developed on the basis of social dialogue and collective bargaining (Eurofound, 2016b).

¹⁸ http://www.dialogue-social.fr/files_upload/documentation/201704251430390.Accord-QVT-du-17-mars-2017%20POLE%20EMPLOI.pdf

Box 1: Agreement on quality of life at work at Pôle Emploi (France, 2017)

For better use of digital communication tools

Any employee absent for a period of more than 5 days (leave, training, etc.) is asked to activate an absence message indicating to the sender that the message will not be processed. In order to facilitate the activation of this message, Pôle Emploi undertakes to load a pre-formatted message into the system. In order to allow an agent, following an absence of more than 5 working days, to see the information available and to manage the emails received, this agent cannot, unless urgently required for another task, be asked to spend the first half-day of his return dealing with a client.

Pôle Emploi recalls that an agent contacted outside of his working hours, or of his working days for agents on fixed days, or during periods of leave, is not obliged to respond to such requests, except in cases of force majeure. An agent cannot be sanctioned for having made use of his right to disconnect in the terms defined by this agreement. The manager must refrain, except in cases of force majeure, from contacting agents or sending them personal messages (as well as on external networks) outside working hours and during holidays. In order to raise awareness of employees' rest periods, the employment centre (if technically feasible) shall take measures concerning messages sent between 8pm and 7am for both the issuer and the recipient: a return email will be sent to the sender reminding him that his message has been issued out of usual working hours, he cannot expect an immediate response from his / her interlocutor (s) and that only urgency can justify the sending of an email outside usual working hours; for the recipient, a received email will contain a note indicating that the message has been sent to him outside normal working hours, and that he is therefore not obliged to reply to it and / or to act on it before the start of his next working day.

Widespread use of telework

Following the experiment set up in 2015-2016 in 7 establishments, Pôle Emploi decided to allow telework in all its centres, in order to make it easier for employees to combine professional and personal life. The scheme is open to all employment centre agents who so wish, subject to the following eligibility criteria: the worker must have worked for at least 3 years on a permanent contract in Pôle Emploi, be working at least 80% of full time, be carrying out tele-workable activities, the necessary practical conditions must be met (including adequate home insurance and network coverage internet and telephone, electrical compliance, etc.) for teleworking from home, must have the approval of their manager.

Telework at home is open only to posts and activities that are compatible with this form of organization, activities that do not require close managerial support, activities that can be carried out remotely for at least one day. The establishment provides and maintains the equipment needed for teleworking and bears the costs directly arising from the exercise of teleworking. The telework option is available for a maximum of two fixed days per week for agents (including managers) who do not carry out supervisory activities and who work more than 80%. For non-supervisory staff (including managers) whose working time is equal to 80%, telework is possible for one fixed day per week. For supervisors, telecommuting is possible for one day per week, split into two half-days that can be scheduled differently from one week to another.

In order to ensure greater awareness of these practices, the parties agree that an inventory of e-mail exchanges outside working hours is carried out after one year of application of this agreement.

In **Spain**, a report on digitalisation by the Trade Union Confederation of Workers' Commissions (CCOO) (2015) concludes that digitalisation will affect the role of the trade unions; relations between workers and employers; working time and spaces; outsourcing of activities. CCOO advises trade unions to anticipate possible negative effects and act accordingly. It emphasises that digital work should be developed in a context of social dialogue and collective bargaining. Trade unions should be more clearly informed about business plans, so that they can better address new challenges and develop new roles. In the view of CCOO, governments should guarantee social protection for those

who could be excluded from the labour market, and they should be open to new labour regulation, subject to social dialogue, to deal with challenges linked to issues such as health and safety, work–life balance and learning (CCOO, 2015). In September 2016, the Confederation set up a working group on Digitalisation and Industry 4.0, to analyse the impacts of digitalisation. The Spanish Confederation of Employers' Organisations (CEOE) also considers that Spain needs an agreement between the government, employers and trade unions, and underlines the lack of qualified workers to cope with the changes implied by digitalisation. CEOE and CCOO are calling on public authorities to invest in education and training, stressing the need for education policies covering these new qualification requirements¹⁹ (Eurofound, 2017).

In **Italy**, in 2014, the Presidency of the Council of Ministers, along with the Ministry for Economic Development, AgID and the Agency for Territorial Cohesion prepared a *Strategy for digital growth*²⁰ with a view to attaining the goals set out in the European Digital Agenda. The Strategy, to be implemented by 2020, was debated with the major union associations and employer organisations, as well as with the most representative organisations in the sector (Eurofound 2017). In 2016, the Italian government signed an agreement to define a pathway for the promotion and support of Industry 4.0 in order to boost investment in and the growth, development and competitiveness of the national production system, with explicit reference to negotiation with and involvement of the social partners. In this agreement, one of the objectives is 'to spread the skills of Industry 4.0 and reduce the skills mismatch' through education and training (Eurofound, 2016a). Digitalisation also impacts collective bargaining as new topics are being drawn to the centre of debate: reconciliation between private and working life, excessive stress and intensification of work due to technological devices, training opportunities, participation in the decision-making process. In November 2016, renewal of the collective agreement for metal workers in Italy introduced a right to training (CEPS, 2017).

Experiments carried out in some Member States show how trade-union measures have evolved, and the acquisition of new rights thanks to collective bargaining in this field. A good example is the right to disconnect, implemented recently through legislation in France and Italy (see box 2).

¹⁹ <http://www.elmundo.es/economia/2016/07/13/5786052222601d9d1d8b465b.html>

²⁰ Presidenza del Consiglio dei Ministri (2014) *Strategia per la crescita digitale 2014-2020*, Rome, 6 November 2014, www.agid.gov.it/sites/default/files/documenti_indirizzo/crescita_digitale_nov_2014.pdf

Box 2: the right to disconnect

In France, since 1 January 2017, firms with more than 50 employees and a trade union representative are constrained by law to include the right of being 'non-reachable' (or the right to disconnect from the use of digital tools) in the mandatory annual negotiations with trade unions, specifically in the part on gender equality and quality of life (Article L.2242-8 French Labour Code). If no agreement is reached, the employer has to prepare a unilateral charter. By requiring agreement on regulations on the use of ICT tools, the law aims to ensure that some time slots are earmarked for rest and holiday (Allen and Overy, 2017).

In Italy, the Parliament approved Act No. 81/2017 on 10 May 2017. The act addresses employment conditions applying to 'ICT-mobile based work'. It introduces the concept of 'smart working' (*lavoro agile*) as a working mode bound to targets or steps rather than to pre-set working time and space, one that is intended to boost competitiveness and to promote work-life reconciliation. Smart working arrangements must be agreed upon through individual agreements that set out the following: rules on work performance outside the office; methods for ensuring control and disciplinary power by the employer; working tools used by the employee; measures ensuring rest and the right to disconnect (Ludicone, 2017)²¹.

In the **United Kingdom**, the British government adopted a digital strategy 2015-2018 which identifies two social challenges²²: skills and 'Digital inclusion'. Issues concerning jobs (creation/destruction/restructuring), working conditions, quality of employment in the new digital services, and involvement of the trade unions in the 2015-2018 strategy, would seem to be some of the dark corners where the government initiative fears to tread (Degryse 2016). The UK Government is committed to a digital strategy for digital access to all public and administrative services with a view to creating a 'digital platform' for all administrative services. The TUC doubted the real intentions of the government: to improve public services or cut down on resources? In its 2014 Congress, TUC recognised that digitisation of public services has become the new mantra of politicians but should be seen as an opportunity to improve services for the public, not solely as a further rationale to reduce resources (TUC, 2014). Individual trade unions also launched a series of initiatives. For instance, Unite the Union is currently negotiating a "New Technology Agreement"²³. It aims to ensure that the introduction of new technology takes place by mutual agreement, based on a comprehensive review of relevant information and monitored by Union Shop Stewards/Representatives with the time and resources to engage in issues arising from it. New

²¹ Concerning company-level agreements related to the 'right to be disconnected', some examples have been developed and implemented in a number of major automobile companies in Germany, where company level agreements have been made between unions and employers. In January 2014, German car manufacturer BMW reached an agreement about T/ICTM with its works council. The agreement stipulates that all employees are allowed to register time spent working outside the employer's premises as working time, which opens up the possibility of overtime compensation for the time employees spend responding to emails after the end of their normal working day. Moreover, employees are encouraged to agree fixed 'reachability times' with their supervisors. Likewise, German car manufacturer Daimler introduced a new policy allowing employees to set their email inbox to 'holiday mode' while on leave; this software allows the automatic deletion of all incoming emails during the leave period. The sender will receive an auto-response stating that, during a given period, emails will be deleted, and they will be invited to contact another employee during this period (EUROFOUND- ILO, 2017).

²² The strategy is geared to the achievement of five goals: encouraging digital innovators; focus on the users' needs; equipping the digital innovator; growing infrastructure, platforms and ecosystems; and ensuring sustainability

²³ <http://www.unitetheunion.org/uploaded/documents/0247-New%20Tech%20Agreement%20for%20print%2024101711-32663.pdf>

Technology in this agreement is defined as any innovation that affects the jobs of workers, including new techniques, machines, controls, materials, processes and/or work organisation systems. The agreement provides a framework and a set of principles to apply across the organization to address the issues that arise from any proposals to introduce New Technology (see box 3).

Box 3: Draft New Technology Agreement (UK)

The Employer agrees to work actively to use New Technology for the benefit of all within the organization including its workers whether directly or indirectly employed.

To this end the Employer and the Union agree to apply the following principles:

- The introduction and control of New Technology on the shop floor will only be made with agreement of the Employer and the Union on behalf of its affected members.
- The Employer will reinvest cost savings from any introduction of New Technology into areas that promote and provide more and better jobs within the organisation.
- New skills or responsibilities will be recognised through negotiated pay increases.

To this end it is agreed that New Technology will only be introduced if:

- The overall number of jobs are protected.
- It does not benefit one group of workers at the expense of another. Workers are ensured proper training.
- Workers are compensated for new skills.
- It doesn't include monitoring and/or surveillance functions without agreement.
- There are clear and fair rules on any personal use.
- There are no negative health and safety issues.
- It will be introduced in a fair and equal manner.

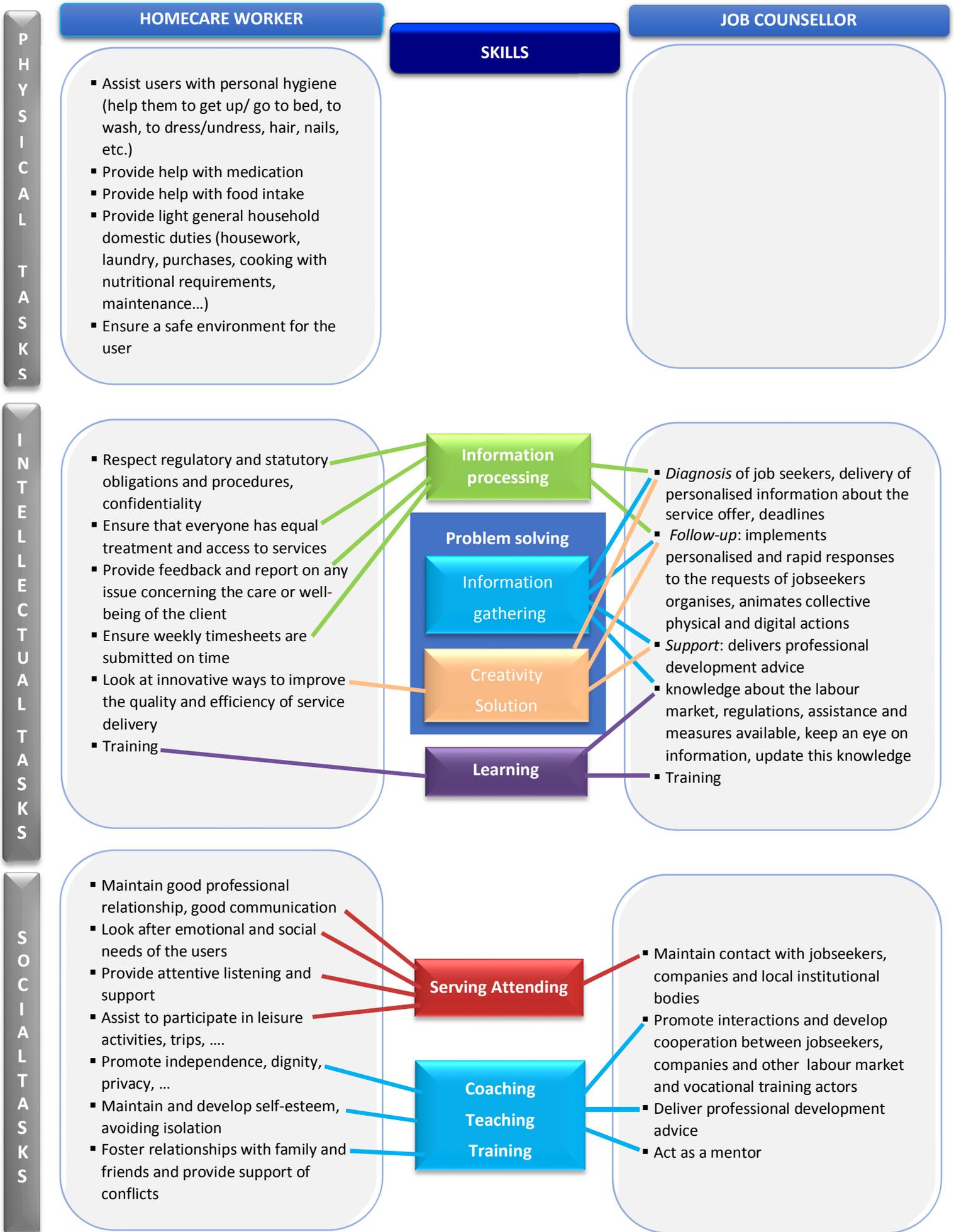
It is further agreed that wherever relevant New Technology will be used to:

- Reduce working time, not pay; and
- Create new jobs.
- These principles will underpin any negotiations

4. National sectoral case studies

Section 2.1.3 highlights the importance of considering the interactions between job tasks, skills, technological tools and methods. The analytical tasks content framework developed by Eurofound (2016a) can be applied, in the area of public services, to the occupations of job counsellor and homecare worker. A job description analysis shows a clear distinction between the types of tasks and skills implemented in the two sectors. A job counsellor performs mainly intellectual tasks, and to a lesser extent social tasks. With regard to intellectual tasks, job counsellors must not only process the information but also evaluate complex problems and demonstrate initiative in the search for solutions. Social tasks are also important, as job counsellors are in constant interaction with jobseekers and companies, following up their requests. Their jobs involve no physical tasks at all. On the other hand, physical and social tasks predominate for the homecare worker. The work of homecare workers cannot be reduced to its technical dimension – assisting clients with personal hygiene, providing care and light household duties – as they also enable beneficiaries to preserve their independence, maintain relations with the outside world, retain self-esteem and dignity. Small intellectual tasks can be identified, such as the respect of regulatory and statutory procedures, obligations and confidentiality, or provision of feedback concerning the care or well-being of the user. Figure 4 presents the different tasks according to their nature, and the skills needed to carry out these tasks.

Figure 4 Job description of home care worker and job counsellor – tasks and skills



In the conceptual model developed for this study (see section 2.2), the approach adopted to determine the impact of digitalisation on the different dimensions of job quality is to examine the tasks and processes implemented by workers to achieve their work. For the record, these processes are: (1) contents of the work; (2) pace of work; (3) work routine; (4) teamwork / interactions; (5) control of work; (6) learning, (7) protection (health and safety). In addition to these effects on work, the model also considers the outcomes of the digitalised work for the workers themselves: (8) physical health; (9) mental health; (10) skills/career progression prospects; (11) reconciliation of professional and social life; (12) job security and (13) access to social protection.

These analytical dimensions structured the content of the questionnaires submitted to the workers in both sectors, and the meetings with the sectoral focus groups in the countries. A first insight into the impact of digitalisation on work is provided through a subjective assessment by workers and trade unionists in the sectors. The first part of the questionnaire is based on the impacts of digitalisation on work highlighted by the desktop research. The workers had to give their assessment of the relevance of a series of types of impact which digitalisation had had on their daily work. The results of these subjective assessments are presented in section 4.1. A second set of insights into the impact of digitalisation is then gained by analysing the comments and reactions of workers from both sectors who were members of the focus groups or responded to the questionnaires. The questionnaire includes a sequence of open-ended questions allowing workers to express their views on the effects of digitalisation in various areas of their occupations, in relation to job quality aspects, as well as in terms of the outcomes for workers. These findings are presented in sections 4.2 and 4.3. The last part of this chapter investigates awareness about existing collective bargaining practices or policies addressing the effects of digitalisation on work and workers at national level (section 4.4).

4.1 Subjective assessment of the impact of digitalisation

The desktop research highlighted several potential effects of digitalisation on different aspects of job quality (see section 3.1). A subjective assessment was carried out of the impacts for workers, based on the responses provided by workers and trade unionists. Workers and unionists were asked to provide a 'relevance score' for a list of potential effects of digitalisation on work dimensions and outcomes for workers²⁴. The list was based on the results of the desktop research. In total, 63 valid answers were collected for these questions. The table below summarises the main findings.

²⁴ Questions: Indicate the degree of relevance of these potential effects of digitalisation for your daily work. On the outcomes for workers?

Workers were asked to note the relevance from 1 (not relevant at all) to 10 (totally relevant). Results were aggregated in four categories: low (1 to 3), medium low (4 to 5), medium high (6 to 7) and high (8 to 10).

Table 3: Subjective assessment of selected potential effects of digitalisation on work dimensions and outcomes for workers - %

Work dimensions		HOMECARE				PUBLIC EMPLOYMENT SERVICES			
		Low	Medium low	Medium high	High	Low	Medium low	Medium high	High
Work intensity	Increased pace of work	41.2%	23.5%	29.4%	5.9%	11.6%	25.6%	23.3%	39.5%
	Intensification of work	38.9%	16.7%	22.2%	22.2%	7.0%	16.3%	18.6%	58.1%
Contents of tasks	Loss of control over task contents	50.0%	11.1%		38.9%	21.4%	23.8%	23.8%	31.0%
	Takes over routine analytical tasks	44.4%	5.6%	11.1%	38.9%	20.9%	25.6%	16.3%	37.2%
	Also performs analytical and decision-making tasks	58.8%	11.8%	5.9%	23.5%	25.6%	25.6%	20.9%	27.9%
	Blurs boundaries between occupations or merges them	41.2%	11.8%	23.5%	23.5%	31.0%	7.1%	26.2%	35.7%
Tasks execution	Loss of control over working processes/methods	41.2%	11.8%		47.1%	20.9%	27.9%	18.6%	32.6%
Control over work	Monitoring of work and workers	41.1%	20.3%	5.8%	32.8%	13.4%	13.4%	20.3%	52.9%
	Performance oriented management	31.3%	18.8%	6.3%	43.8%	23.3%	9.3%	14.0%	53.5%
Social skills	Loss/standardisation of social relationships with users	41.2%	23.5%	5.9%	29.4%	23.3%	7.0%	25.6%	44.2%
	Loss/standardisation of social relationships with colleagues	50.0%	5.6%	11.1%	33.3%	34.9%	16.3%	11.6%	37.2%
Learning	Digital skills gap	38.9%	27.8%	22.2%	11.1%	14.6%	12.2%	19.5%	53.7%
Earnings	Impact on earnings	63.8%	12.1%		24.1%	45.8%	16.5%	15.4%	22.3%
Work life balance	Blurs frontiers between work and social/family life	44.4%	11.1%	11.1%	33.3%	30.2%	11.6%	25.6%	32.6%

Outcomes for workers		Low	Medium low	Medium high	High	Low	Medium low	Medium high	High
Health	Physical health outcomes	27.8%	16.7%	11.1%	44.4%	17.6%	20.6%	26.5%	35.3%
	Mental health outcomes	31.6%	5.3%	15.8%	47.4%	16.7%	11.1%	16.7%	55.6%
Prospects	Career prospects and employment security	36.8%	10.5%	21.1%	31.6%	42.9%	8.6%	22.9%	25.7%
Rights	Social protection rights	50.0%	16.7%	11.1%	22.2%	48.6%	8.6%	17.1%	25.7%
	Right to disconnect	29.4%	23.5%	5.9%	41.2%	35.7%	19.0%	14.3%	31.0%

The results collected in the two sectors show that for about two thirds of the workers the digitalisation process resulted in an intensification of work and, to a lesser extent, an increase in the pace of work. They also generally felt that digitalisation led to higher degrees of control over work and the workers, as well as increased monitoring of work processes and the introduction of

performance-oriented management. The results also emphasise the importance given to physical and mental health problems in the eyes of the respondents. The impact of digitalisation on control and on the development of digital skills are also asserted as significant issues by about two out of three workers. Likewise, the right to disconnect, as a means of protecting oneself from a perceived or current requirement to be always connected, is one of the elements considered highly relevant for workers. Workers seemed to have less clear-cut views on the other factors suggested in the list, with a proportionally equivalent share of workers acknowledging the issue to be either relevant or irrelevant. Findings indicate that the majority of workers do not feel that digitalisation has had a significant impact on their earnings or their social protection rights.

Despite this apparent convergence of opinions, significant differences can be observed across sectors, at least concerning the impacts on work aspects. On the one hand, nearly all of the effects of digitalisation on the various dimensions of daily work are perceived as having very high importance by workers in the public employment services sector. The only exception is impact on wages, which is widely noted as irrelevant in both sectors. On the other hand, workers in the home care sector attach much less importance to the various aspects of the impacts of digitalisation on work, as almost all the items displayed are rated as having a relatively low impact on their daily work. The most striking difference concerns the "loss of control over working processes / methods" and the development of a "Performance-oriented management". These items are the only ones assessed as very relevant in the sector. It is worth mentioning that some items are also considered as significant by a substantial number of workers in the home care sector: those relating to the control of tasks and control of work, and to a lesser extent the "balance between professional and social life" or the "loss or standardisation of social relationships with colleagues".

Beyond these divergences on the dimensions of work, there is still a marked similarity of views between workers in these two sectors regarding the outcomes of digital processes for workers. In both sectors, workers point strongly to the impact of digital tools and processes on health conditions, physical and/or mental. Equally, both sectors feel that the outcomes on "career prospects and employment security" or "social protection rights" are of minor importance.

An analysis of this first subjective assessment shows that the effects of digitalisation on work previously identified in the desktop research are largely confirmed by the respondents in the two sectors under scrutiny. The workers' assessment of the various types of impact also shows substantial differences between the two sectors concerning impacts on the dimensions of work. While the effects of digitalisation on work dimensions are strongly emphasised by the public employment services sector, far less importance is attached to these changes in the home care sector. This difference of views could be partially explained by the clear differences between the two sectors regarding when the digital transition took place, and the form it has taken. In the public employment services sector, the transition to digital tools and processes has a long history and has affected almost all the tools and processes used to carry out the tasks inherent to the job. In the home care sector, the digital transition is more recent and has been less substantial, so far only affecting more limited aspects, in particular the use of a digital tool (apps on smartphones or tablets) to manage the work schedule of carers.

In the remainder of this report, we analyse the comments gathered during the national sectoral focus groups as well as the responses to the questionnaires distributed to the workers. This allows

for a more focused vision of the impacts of digitalisation on work, reflecting the perceptions of workers in both sectors in relation to their daily experiences.

4.2. Impact of digitalisation on job quality in the Public employment services sector

In the public employment services sector, the digitalisation of activities was first introduced a long time ago, most frequently in the early nineties, with developments in computerisation and information and communication technologies (ICTs). The new tools made available by the digital transition were also a spur to optimisation / rationalisation of work organisation. This occurred as part of the restructuring of public services according to the precepts of New Public Management, more focused on performance. For users, interaction with public employment services has gradually become mainly digital. Computers are now central to the job tasks of the job counsellor, to interact with users or other departments and to process jobseekers' files.

4.2.1. Impact on work dimensions

Through the focus groups and several questionnaires, PES workers strongly highlighted the positive and negative impact of digital tools and processes on the **content of their work and the tasks to be performed**.

The digital transition has led to an **increased workload** in the sector. The flow of information to be processed by workers (emails, files, exchanges) has increased considerably, as emphasized in several questionnaires. At the same time, the reaction time has decreased. A response to an email is expected much sooner than in a communication by letter or form. A limit on reaction time is also set by regulations in the sector, both for exchanges with jobseekers and for internal exchanges relating to the processing of a file, or attendance of the users.

With regard to the **execution of tasks**, various workers in the PES sector report a negative aspect: the frequent occurrence of technical problems (machines and networks), or the inadequacy of the digital tools to do the job. Others emphasize the need to adapt the digital tools to enable them to fully achieve the required tasks. Some respondents mentioned that technical problems generate accumulated delays and prevent workers continuing their work, which can sometimes lead to frustration.

Some positive aspects of digitalisation on work content are, however, also emphasized, mainly related to the **improvement of work organisation through increased rationalisation**. A limited number of questionnaires mention that the digital transition makes it possible to work faster and to have better access to the necessary information. Digitalisation allows **better time management**, adapted to the tasks to be performed. Digitalisation minimises the loss of information in a complex system of information management and circulation. Communication between the different departments of a company, within the workplace but also across the agencies in the country, is broader and more efficient than before. Thus, digital tools can improve the monitoring of service users by allowing workers to spend more time efficiently focusing on complex cases, in a context in which they have to deal with a large portfolio of cases.

The results presented in the previous section indicate that for nearly half the workers in the PES sector, digitalisation is an important factor behind an **intensification of the pace of work**.

Paradoxically, the topic of work pace intensification is hardly mentioned by focus groups and questionnaires. However, the French and Spanish focus groups, as well as several respondents, stress that the pace of work is now dictated by digital procedures and tighter deadlines for completing tasks. They point out that there is often a discrepancy between the time theoretically allocated to the processing of information and the time actually required to do it, which can vary from one person to another according to their skill with digital tools. Several questionnaires point out that digitalisation has made some work more routine, through greater simplification of tasks. But others, notably some participants in the French focus group, express a positive view of the digital transition, which dispenses with routine tasks so that a more focused service can be provided to users.

In the previous section we highlighted that nearly one in two workers perceived the **reduction in social interactions with service users, but, to a lesser extent, also with work colleagues** as one of the negative effects of the digital transition. This point of view was also reflected in the questionnaires, and in the comments made by the French and Spanish focus groups, which point to a loss of interaction with users leading to a sense of dehumanisation of the work done, or even to the impression that the institution focuses more on digital tools than on users. The digital transition has also had the effect of reducing teamwork, the loss of interactions with colleagues being perceived as one of the consequences of work which is more individualized, more compartmentalized. The members of the two focus groups also mentioned that different skill-levels with digital tools between workers of the same team could generate new tensions: some workers feared asking for (too much) help from more digitally-skilled colleagues, while others grew tense if asked to help too frequently or on repeated occasions. Some participants in the French focus group, as well as some questionnaires, mentioned positive impacts of digitalisation on the interaction with users and co-workers. By opening new channels of interaction, thus allowing easier access to services, the digital transition makes it possible to be closer to users and to better focus on their needs. The introduction of digital tools has also improved interaction with work colleagues, not necessarily those in the work team itself but rather those in other departments or located elsewhere.

Both the focus groups and several questionnaires strongly express the view that digitalisation has resulted in a **loss of control over the content of tasks**. Most respondents questioned about the impact of digitalisation on their daily work also considered this as a very significant impact (see previous section). As mentioned earlier, the standardisation of work schedules and work organisation introduced by the use of digital tools and processes has generated a feeling of distancing from work. Reactions to problems and communication about these are now more uniform, and conveyed through digital channels. Several questionnaires, as well as the members of the French and Spanish focus groups, refer to a feeling of **'dematerialisation' of the work** to be carried out, as analogue material and communication have disappeared. This dematerialisation tends to blur the tasks themselves, which seem less tangible, at least in appearance: "the work has become less visible". The dematerialisation of activities is a more positive aspect for some workers, who welcome the reduction in the number of trips and meetings following digitalisation.

The focus groups and questionnaires also point out strongly that digitalisation has contributed to **increase monitoring of workers**. The aspects monitored include the work carried out (progress of tasks, time taken to complete the tasks, interaction-times with users, etc.), as well as characteristics of workers, such as working time, absenteeism, skills developed through vocational training, etc. In itself, all this is not new and was already part of the monitoring done by the employer. However, worries are expressed about the flow of information that the advanced digitalisation of workplaces

generates daily, and the use that can be made of this information to assess workers in terms of performance and efficiency.

The issue of **vocational training related to the utilisation of digital tools** has also given rise to many reactions, generally critical. In several questionnaires, the workers stress the need for time, not sufficiently provided, to adapt to the use of digital processes. The French and Spanish focus groups, as well as several respondents, underline that there was little or no vocational training prior to the implementation of digital tools, and that the current training appears inadequate in relation to the workers' need and the skills required.

The debate on the digital aspects of vocational training, '**e-training**', is illustrative of the tensions that exist concerning the digital transition and the inherent individualisation of work. Several respondents agree on a number of positive aspects of e-training. It allows you to move at your own pace in the learning process, offers more thematic choices, and is easier to access in a decentralized way, reducing the need for travel. However, French workers have particularly reacted to the increased use of 'e-training' as a substitute for traditional training, which is more collective and involves direct interaction with the trainers. Now the worker is alone in front of his/her computer. While this is appropriate for some workers, several respondents deplore the lack of group dynamics and interaction with trainers and co-workers. Others note that the use of e-training helps to increase the digital divide between colleagues in the same department. The time spent by a worker training online is not properly taken into account when calculating overall working time, especially when it is done during teleworking periods. Workers also express the concern that individual behaviour of workers in relation to the offer of on-line training (choice of subjects, frequency, time spent) becomes a benchmark for evaluating their professional performance, with possible consequences for their career progress.

4.2.2. Outcomes for workers

The impact of digitalisation on the health of workers, both physical and mental, is also a subject that generated many reactions in the focus groups and questionnaires.

In terms of **physical health**, many comments refer to vision problems as a result of the intensive use of computers, but also to musculoskeletal disorders such as tendinitis or back problems caused by prolonged immobility. Reduced physical activity – less need to move around - following the digital transition can also generate cardiovascular problems linked to a risk of increasing obesity. Several respondents also report an increase in physical fatigue.

The digitalisation of work is also perceived by public employment service workers as having significant **implications for mental health**. They point to the higher incidence of stress, caused by an increased workload and changes in the organisation and pace of work, as a source of greater mental fatigue. As a result, there is higher exposure to psycho-social pathologies, such as depression, mental exhaustion or burnout. Among the psycho-social risks, the issue of harassment resulting from interaction with users is the subject of contradictory positions in terms of physical and mental health. Some workers recognise that the introduction of digital channels has meant less vulnerability to physical aggression during interviews. But for other workers, the transition to digital working has also led to an increase in digital harassment, particularly because users expect faster reactions and faster processing of their files when using digital tools to interact. While physical harassment has decreased, there has been an increase in virtual harassment.

Concerning the possible impact of the digital transition on **workers' rights**, the reactions were more limited in scope. Neither formal infringement of trade union rights nor effects on the access to social protection rights were mentioned by workers. Some questionnaires express concerns about confidentiality and data protection, because of the large flow of information produced by digital means and the lack of transparency with regard to the actual or supposed use of this information by the employer. The right to telework is mentioned, both its positive aspects, in particular making it easier to combine professional and social life, but also certain more negative aspects, such as exceeding statutory working time. The right to disconnect is also referred to positively and negatively. It is praised as a significant step forward by the French workers who benefit legally from it, and as something expected from social dialogue and regulation by the Spanish workers. However, some of the French workers also pointed out that this right can be relatively ineffective, as it may not be sufficiently respected by some users and /or employers.

Regarding the possible differences in the impact on workers of digital tools, depending on the **individual characteristics of workers** (age, sex, origin, education), the comments mainly focus on the acquisition of digital skills. The observed differences are frequently related to a generational difference, with older people finding it more difficult than younger colleagues to fully acquire the digital skills that are needed. For other workers interviewed, it is, rather, differences in educational levels that explain the dissimilarities between workers, or their personal skills in the field of new technologies. No differences attributable to the sex or origin of workers were mentioned.

4.3. Impact of digitalisation on job quality in the Homecare sector

Unlike the public employment services sector, the digital transition of which began much earlier and underlies most of the tasks to be performed, the emergence of digital tools in the work of homecare workers is more recent, and mainly limited to the use of a digital programme on mobile devices such as smartphones or tablets. This application is used to manage the daily work agenda. It usually also records the performance of predefined tasks for scheduled users, and sometimes the working time spent on these tasks. Generally, it also enables communication with the employer and co-workers, notably by phone and email. But for homecare workers, digitalisation has had a very limited impact on the core of their jobs, the provision of various care services to dependent persons at their homes. This more limited and focused spread of digital tools in the sector largely explains the lower number of comments collected on the impact of digitalisation.

The **positive contribution of digital tools to better work planning** was reported, mainly in the national focus groups. These allow for better centralisation of information, improved management of working time (time and travel), and even interactions with colleagues. This better organisation of work makes it possible to improve follow-up of users.

Many of the more critical comments made by the French, Spanish and English focus groups, as well as in the questionnaires collected in these countries, relate to the effects of the shift to digital tools on the **planned organisation of work and tasks to perform**. For some workers, there are inconsistencies in the planning of tasks that are more difficult to correct with a digitized process. In the focus group in France, several workers refer to rapid changes in the work schedule, without prior warning. Participants also mentioned that with digitalisation, it is more difficult to go backwards, to

rectify errors once they have been digitally processed and incorporated into work schedules and regulated procedures.

Other workers report **problems related to the recording of working time**, which is one of the other functions of the digital tool. Some regret a lack of clarity in the number of hours worked, or the impossibility of checking the working time of previous periods. 'Social time', spent on personal interaction with the users of the service, is not properly taken into account, if at all, in the calculation of the time necessary to perform tasks. Standby availability times are also poorly integrated into official working time. The time required to reach the home of the users is also underestimated, especially when traffic jams occur. Several workers in the sector express their discomfort with the increase and standardization of monitoring of work, through the digital calculation of working time.

A few workers believe that digitalisation has had a **negative effect on communication** with co-workers and supervisors, which now mainly takes place through the digital application channel, which is more standardised.

Both the various national focus groups and respondents to the questionnaires agree on the **weakness, or non-existence, of professional training** received to use digital tools. They emphasise the need for time to adapt to the use of digital technology.

The impact of the use of digital devices on the workers themselves is mainly evoked by comments on **outcomes for mental health**: some workers mention a certain mental fatigue, and increased stress resulting from the need to regularly consult a schedule, but also to respond quickly to requests by telephone or email, from users, colleagues or supervisors. Effects on **physical health** are also mentioned. There has been a marked increase in traffic accidents caused by telephone consultation or use while driving. During the French focus group meeting, it was mentioned that the home care sector has become the sector with the highest rate of traffic accidents.

4.4. Awareness on bargaining and/or policies in the field

Three open questions in the questionnaire concerned the awareness of workers from the two sectors about whether/how the challenges posed by digitalisation had been addressed in social dialogue and policies in their countries, as well as asking about the existence of (good) practices²⁵. Only very few responses were provided, generally reflecting a lack of awareness or insufficient attention paid to digitalisation in collective bargaining and policy processes.

Several reactions from workers from both sectors underscore that digitalisation and its consequences on work are excluded from collective bargaining, as employers tend to consider that this is above all a topic related to development and management, which they are entitled to organise themselves.

²⁵ *Social dialogue*: Is digitalisation and its consequences (sufficiently) included in the framework of national social dialogue, at interprofessional and sectoral levels? What role does social dialogue or collective bargaining (at national, sector or local level) play in regulating the impact of digitalisation on employment and working conditions? / *Policies*: Does your national (and/or regional/local) government have policies that regulate digitalisation? Does your national (and/or regional/local) government have policies that regulate digitalisation? / *Practices*: Are there (good) practices undertaken by trade-unions and/or employers to cope with the challenges of digitalisation?

While some elements related to digitalisation are included in social dialogue (i.e. health outcomes), there is no integrated approach to the impact of digitalisation within collective bargaining. Some questionnaires explicitly state the importance of understanding the impact of digitalisation on workers and reflecting this in the social dialogue, as well as informing workers about it. A few French workers mention the spread of teleworking and the introduction of the law on the right to disconnect as positive achievements of social dialogue.

Workers from both sectors also express their lack of awareness, or the inexistence, of policies related to digitalisation in their local, regional or national contexts. Some workers mention policies on teleworking or data protection, and the law on the right to disconnect for French workers.

5. Conclusions and recommendations

The research findings demonstrate that digitalisation indeed has concrete effects on many aspects of employment and its quality, as well as direct outcomes for workers, particularly on their physical and mental health. If digitalisation had a positive effect on the rationalisation and improvement of work organisation since its introduction, it had also adverse effects for the workers that have not enough been taken into consideration during its design and implementation phases.

The impacts of digitalisation vary according to the sectors and occupations considered, in terms of the tasks performed and the skills applied. Measuring the impact of digitalisation at the level of occupations and tasks blurs the differences between countries, as the content of the work itself is largely similar across countries.

In the public employment sector, digitalisation is a long-standing fact and concerns all the tasks and skills mobilised by job counsellors to do their job. The effects mentioned by the workers therefore cover all the dimensions of employment, notably increases of the workload and the pace of work and decreases in the control of the job content.

In the home care sector, digitalisation is more recent and is limited to the use of digital tools to organise work and task planning, but do not affect yet the core of the job of home care workers, home-based support for dependent persons. The impact of digitalisation mainly concerns the organisation and the planning of tasks.

Workers in both sectors agree, however, to emphasize significant effects on physical and mental health, as well as increasing differences between colleagues at the workplace, including a generational gap in mastering the necessary digital skills. The workers of both sectors also underline the weakness of the professional training received in connection with the use of digital tools and methods.

Although digitalisation has a marked effect on the content of work at various levels, workers in both sectors converge in stating their lack of knowledge and / or the lack of consideration of these effects in the context of social dialogue as well as policies implemented by the various levels of governance and social dialogue (local, regional, national and European).

There is therefore a real need to integrate the issue of the impact of digitalisation on all aspects of job quality in a cross-cutting way in the context of collective bargaining and the definition of policies.

The digital transition and the climate transition are and will be two major structuring trends of the evolution of work and societies in Europe in the years to come.

It is important to ensure that digitalisation is a positive pathway of evolution for work and job quality of the workers, in particular by setting the necessary safeguards to protect workers, and more broadly European citizens, from the potential drifts of digitalisation. Social dialogue, regulations and policies have a major role to play in this respect.

Recommandations

As digitalisation impacts job quality across all its dimensions, **it should be given a more central role in social dialogue agendas as a cross-cutting concern, at interprofessional, sectoral and company levels.** It seems essential to be aware of the various impacts and outcomes of digitalization in terms of health, work-life balance etc.

The impacts and outcomes highlighted in this report point to a clear need to promote decent working conditions and, to a greater extent, sustainable quality employment. It is crucial to **improve and/or develop regulations as safeguards against potential negative outcomes of digitalisation: across all levels of governance and social dialogue.**

Both public authorities and social stakeholders should **carry out detailed studies of the impact of digitalisation at local/regional/national levels, across sectors and occupations,** to be equipped to better understand the impact of digitalisation on work dimensions and prepare for changes in occupations. These studies should be part of an integrated approach under the auspices of multi-stakeholder alliances, including social partners.

This integrated approach should **ensure that digitalization is not detrimental to users.** It seems necessary to keep services focused on users: to strike a right balance between digital tools and personalized services to users, and to ensure that quality of services is guaranteed (monitoring, evaluation, updating, etc.).

The European Union and its Member States should **raise awareness of the need for digital skills.**

The European Union and its member states should **expand the availability of digital skills through the education and training system.** The education and training system should provide broader skill-sets, including competences that are growing in importance because of new technology. Specific digital skills should be embedded in a wider strategy, alongside the development of transversal skills (soft skills and communication skills). This will make it possible to tackle the digital divide and avoid the risk of marginalization, in the labour market and in everyday life. There is a need to ensure that all citizens have the ability to adapt to changing technologies and to make the most of technological progress.

The Member States should **promote access to learning and training (including e-learning and e-training, but not exclusively).** More opportunities are needed to train and upskill staff and expand their capabilities, both to overcome the digital divide (notably for older workers) but also to develop the new competences linked to the changing nature of jobs. In the homecare sector, there is strong

evidence of a lack of available professional development activities. A great effort is needed to address this issue. At company level, there is a need to support change by embracing new technologies and developing communication. There is a need for training on the use of new digital tools and programmes in order to increase the know-how of workers.

The impact of digitalisation should be part of national, regional, local as well as European levels of governance in a multi-faceted perspective, not only focused on economic growth or productivity gains. The European Union and its Member States should not just consider digitalisation as a management and production tool. Digitalisation is also about protection for the individual and for workers. Social dialogue structures should be consulted and included from the beginning of the process to the end.

The European Union and its Member States **should strengthen existing rights, such as data protection and workers' rights, and promote new ones.**

The European Union and its Member States **should initiate the debate on the right to disconnect, as a new labour right.**

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