



Comparative Report. Preliminary findings: Desk research

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Introduction

The aim of the DEEP VIEW project is to analyse how social dialogue and collective bargaining are addressing the effects of virtual work on working conditions. The study is focused on five countries (Austria, Denmark, Estonia, Portugal and Spain) representing different varieties of industrial relation systems; and three sectors in which, according to European sources, virtual work is most used (financial activities and computer programming, consultancy and related activities) or has become more widespread recently (home care activities). More specifically, the following specific objectives and questions are addressed:

Objectives:

1. Analyse how social dialogue is addressing the effects of virtual work on working conditions
2. Analyse how sectoral collective bargaining is addressing the effects of virtual work on working conditions
3. Identify good social dialogue practices at the company level promoting decent and productive virtual work
4. Analyse the good social dialogue practices identified, in particular: the process (how good practices have been introduced and through which regulatory tools), the rationale behind, the observed outcomes and the potential transferability

Research questions

1. How do trade union and employer organisations at peak and sectoral level frame and understand the employment challenges due to New ICTs and virtual work in different countries and sectors?
2. How have the effects of virtual work on working conditions been addressed in the national, sectoral and company social dialogue and collective bargaining?
3. Which good social dialogue practices at the company level can be identified?

To address those objectives and research questions, the DEEP VIEW project is conducting desk research and field work (semi-structured interviews and company case studies).

This preliminary report presents the outcomes of desk research, which was oriented to obtain a clear picture of the ‘state of the art’ in the involved countries and sectors. The report first reviews the main concepts and categories used to approach the topic and provides a definition of virtual work. Second, it describes the incidence and features of virtual work based on both European and national surveys. Third, it reviews previous research outcomes on the effects of virtual work on working conditions at national and sectoral level. Fourth, it analyses national approach to regulate virtual work. Fifth, the report addresses main institutional features of industrial relations in the three sectors and five countries; and the role played by social dialogue and collective bargaining at sectoral and company level to regulate working conditions of virtual workers.

1. Conceptualisation of the research topic

Virtual work is a generic term that refers to ‘*all forms of work carried out either at home, in public spaces or in non-traditional working environments using the Internet, computers or other IT-based tools*’ (Vandeluc and Vendramin, 2016:29). It covers all traditional and new arrangements which enable to work in alternative places beyond the employers’ premises,

through the use of ICT (telework, ICT based mobile work, remote work, etc.). This section¹ reviews and analyses the different concepts used in the literature to reflect the impact of the so-called new Information and Communication Technologies (New ICT) on work arrangements involving a variety of working time adjustment, workplaces and mobility patterns.

Telework is still a prevalent concept in empirical research for referring to work arrangements outside employers' premises enabled by new ICT. As explained by Messenger and Gschwind (2016), the terms telecommuting and telework, originated in Jacks Nilles' (1975, 1988) and Alvin Tofflers' analysis (1980), referred to processes where work could be relocated to employees' homes thanks to new technologies such as computers and telecommunications tools. The discussions around the term telecommuting were mostly concerned about reducing commuting times, an issue especially problematic at that time in the United States (Nilles, 1975). The term 'telework' took up this aspect (Nilles, 1988, Toffler, 1980) and included additional possibilities and potentialities of remote work arrangements. In this sense, Messenger and Gschwind (2016) perceive an evolution from telecommuting to telework in this early analysis, despite the fact that both concepts are usually treated as synonyms in the contemporary literature. Compared to telecommuting, telework envisioned advantages beyond reducing commuting time and related costs such as decreasing pollution or even favouring the creation of new industries, drawing on a narrative characterised by an optimistic vision of the effects of technology on working and living conditions.

The literature produced in the 1980s and early 1990s, influenced by Nilles' and Tofflers' early analyses, as well as pioneer work arrangements promoted by California-based companies in the 1980s, focused on telework merely understood as home-based work carried out by a standard employee. At that time, the concept referred thus to this form of remote but stationary work because the first generation of ICT did not allow mobile work. Three decades later, however, the spread of cheaper, smaller and increasingly connected devices, like smartphones and tablet computers (new ICTs) accompanied by a vast dispersion of the Internet and the World Wide Web, has favoured a diversification in the way ICT-enabled work is performed, organised and regulated. Due to this, the definition or understanding of telework as 'work from home' carried out by a standard employee falls short, becomes blurred and to some extent confusing. Over the past decade the concept of telework has been increasingly contested by the proliferation of new terms referring to a variety of forms of ICT-enabled mobile work which partly overlap. Nevertheless, it is worth stressing that in many articles and even in the European Framework Agreement, the term telework is mostly used for any kind of work performed outside of the employer's premises, not specifying the place (i.e. the employee's home). Moreover, in many contemporary articles and regulatory or political approaches, there is an underlying or explicit understanding that telework is mostly done using ICT-devices, not necessarily from at home. Thus, the term telework is closely related in contemporary articles to new terms such as virtual work.

Table 1 summarises the main definitions gathered in the literature, from the well-established concepts of telework and telecommuting to the most recent concepts of virtual work and mobile virtual work, including concepts related to the emergence of the so-called 'platform work' - crowd work.

Table 1. Identified² terms and definitions

Concept	Definition	References
Telework (EU)	Telework is any form of organising and or	EU framework agreement on

¹ This section partly draws from a report elaborated by Notus-asr for a project commissioned by Eurofound, consisting of a literature review about ICT based mobile work and working conditions.

² All the terms found in the literature review that referred to work practices enabled by the use of new ICT that may involve a variety of working time adjustment, workplaces and mobility patterns.

framework agreement)	performing work using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.	Telework
Telework	Work performed by (a) those whose remote work is from the home or satellite office, (b) those whose telework is primarily in the field, and (c) those whose work is 'networked' in such a way that they regularly work in a combination of home, work, and field contexts.	Morganson et al. (2010) (* Allen et al. (2015)
	A form of work organisation in which the work is partially or completely done outside the conventional company workplace with the aid of information and telecommunication services.	Konradt, Schmoock and Malecke (2010)* (* Allen et al. (2015)
Telecommuting	Telecommuting is a work practice that involves members of an organisation substituting a portion of their typical work hours (ranging from a few hours per week to nearly full-time) to work away from a central workplace -typically principally from home - using technology to interact with others as needed to conduct work tasks.	Allen, Golden and Shockley (2015)
T/ICT Mobile work ICT-based mobile work	The use of ICT – such as smartphones, tablets, laptops and desktop computers – for the purpose of work outside the employers' premises.	Eurofound and ILO (2017)
E-nomad	Individuals who use ICT at least sometimes and do not have their employers' premises (or their own premises if self-employed) as the main place of work.	Eurofound (2012)
Smart work	Flexible working system that allows to work in a convenient and efficient manner free from time and place constraints (anytime, anywhere) using ICT on a network.	Lee (2016) based on South Korean policy documents for the activation of smart work
Flexible work arrangements	Alternative work options that allow work to be accomplished outside of the traditional temporal and/or spatial boundaries of a standard workday.	US Office of Personnel Management (2013)* (* Allen et al. (2015)
Virtual work	All forms of work carried out either at home, in public spaces or in non-traditional working environments using the Internet, computers or other IT-based tools	Valenduc and Vendramin (2016)
	Labour, whether paid or unpaid, that is carried out using a combination of digital and telecommunications technologies and/or produces content for digital media.	Webster and Randle (2016), Meil and Kirov (2017)
Virtual teams	Spatially or geographically dispersed work arrangements that are generally characterised by a relatively short life span, technology-enhanced communications, and a dearth of face-to-face interaction.	Tworoger et al. (2013)
Mobile virtual work	Virtual work which is physically mobile	Vartiainen (2006)
Crowd work	Crowd work includes different forms of paid work organised by an online platform.	Huws et al. (2016)

Three key analytical dimensions can be identified throughout this continuum of concepts and terms that aimed to grasp the transformation of work due to the effect of ICT (Lee, 2016):

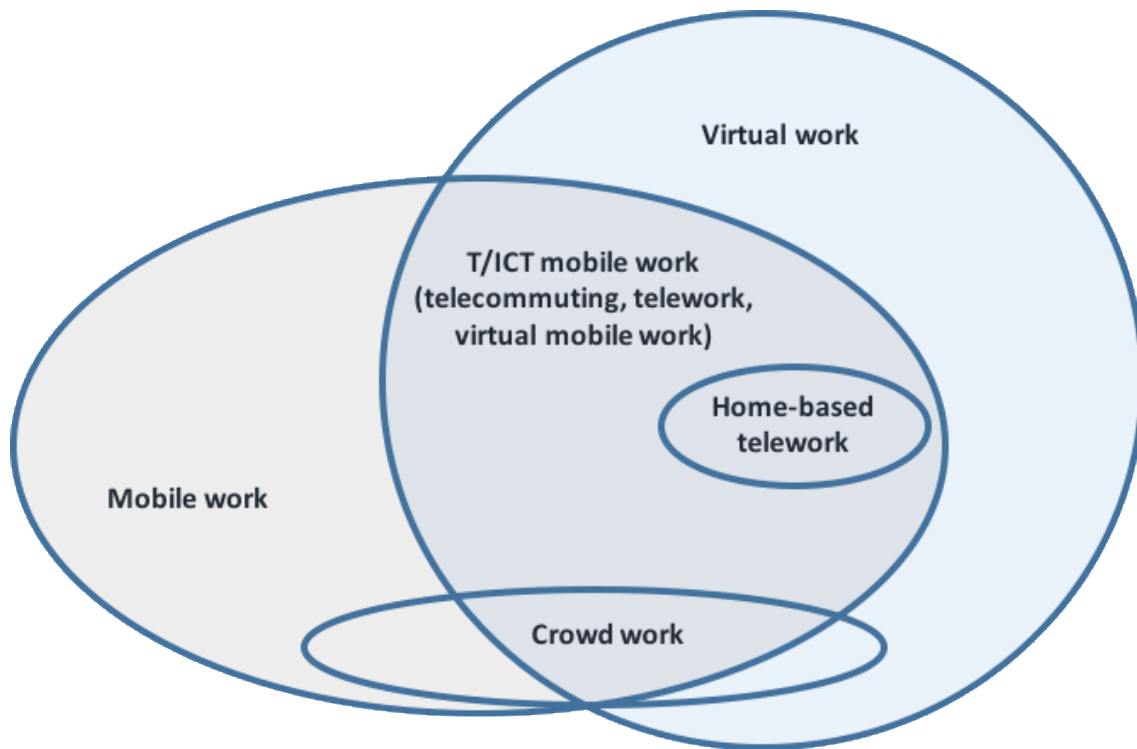
- Technology: distinct concepts are related to different stages in the development of information and communication technologies over the last four decades;
- time and place (working time and workplace flexibility): the adoption of ICT at the workplace facilitated the introduction of new working time arrangements, as well as the use of different feasible worksites and mobility patterns;
- the nature of tasks: the completion of tasks became more knowledge-intensive, project-based and virtual, and employment relationships changed accordingly.

The concepts of telecommuting, telework, and ICT-mobile work mostly deal with the first two analytical dimensions. In fact, recent definitions of telecommuting and telework are similar to the concept of T/ICT mobile work used by ILO and Eurofound (2017). They focus on flexible work arrangements (time and place) enabled by the use of new ICT. This is also the case of less common terms such as e-nomad (which suggests high spatial mobility) and smart work (a term that entails a positive connotation as 'convenient' and 'efficient').

Virtual work encompasses the first two dimensions (technology and time/place) but additionally, it may refer to changes in the organisation of work fostered by ICT, such as the nature of tasks. In some approaches, the focus of virtual work lies on jobs and activities that use a combination of digital and telecommunication technologies and/or produce content for digital media - regardless of time and place flexibility (Webster and Randle, 2016; Meil and Kirov, 2017). Debates around changes in employment relationships are mostly related to the **virtualisation of the organisation of work**, especially as regards the emergence of crowd work, a term which encompasses different forms of paid work organised through an online platform. In most definitions, crowd work does not explicitly address the time-place dimension although it is supposed to be a very flexible work arrangement. Thus, virtual work covers all new forms of work and employment which combine unconventional workplaces, the use of technologies and new contractual arrangements, subsuming different terms such as telework, ICT based mobile work or platform work (Valenduc and Vendramin, 2016).

Figure 1 below represents how these different concepts overlap with each other.

Figure 1. T/ICT mobile work as virtual mobile work



Source: Own elaboration.

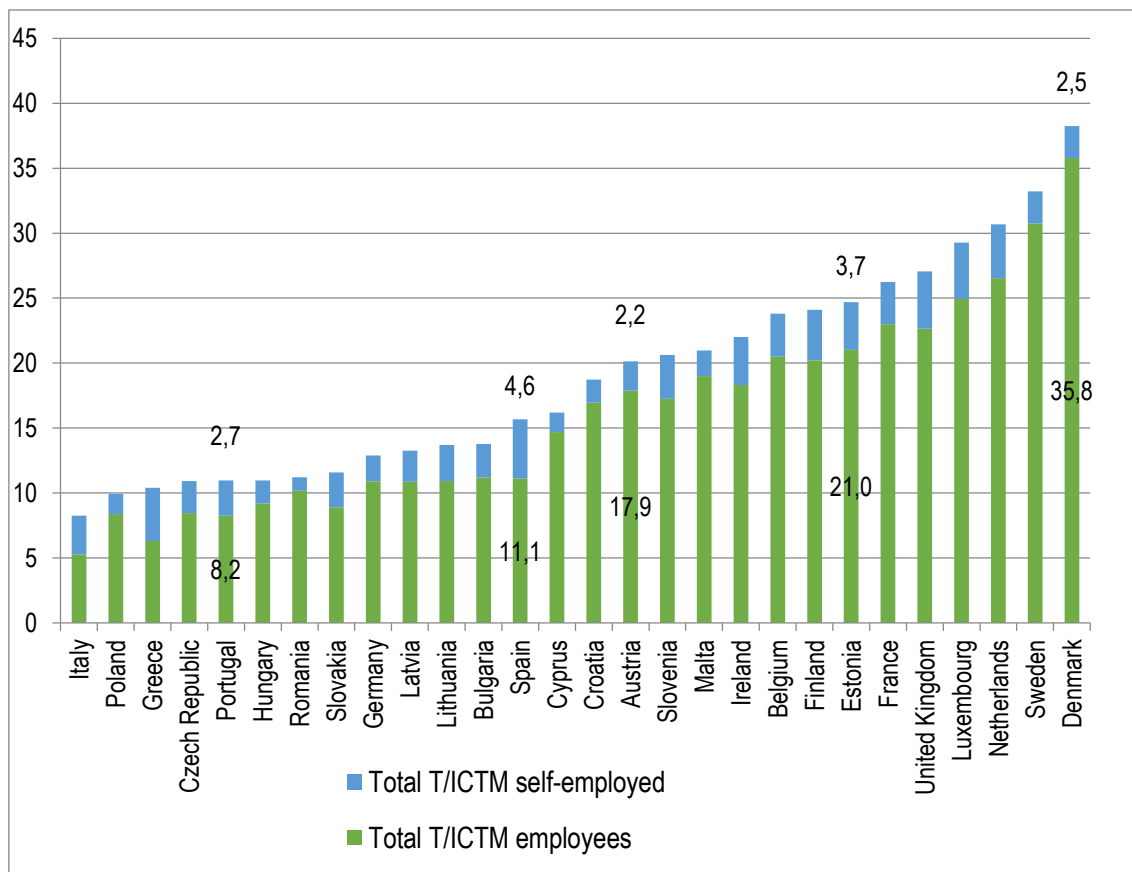
Deep View uses the generic term “virtual work”. However, the project adopts a narrower conceptualisation. Within the DEEP VIEW project, **virtual work refers to those work arrangements** which concern workers with an employment contract, where work is carried out either at home, in clients’ offices, in public spaces or in non-traditional working environments using the Internet, computers or other IT-based tools. ‘Crowd work’ or ‘virtually organised work’ which is performed by workers who do not have the status of employees, is outside the scope of the current report.

2. Incidence

This section addresses the spread of virtual work arrangements across the countries and sectors considered in the DEEP VIEW study, on the basis of different data sources. In order to ensure comparability, a first approach is conducted on the basis of the Sixth European Working Conditions Survey (EWCS). For the purposes of the analysis of the EWCS we assume the definition of telework/ICT-Mobile work (TICTM) by Eurofound and ILO (2017) as a proxy for virtual work. TICTM is defined as a work arrangement characterised by working with ICTs from more than one place and with different degrees of mobility (hotels, cafes, home, etc.) and with a potential for flexibility as regards time and place of work.

Figure 2 below shows the incidence of TICTM across the EU 28 countries, distinguishing TICTM employees and self-employed. Data show that Denmark accounts for the highest share of TICTM of the five countries considered (38%), followed by Estonia (25%), Austria (20%) and Spain (17%). At the other end, Portugal (11%) is among the EU countries with the lowest incidence of these forms of employment. By employment status, Spain (5%) and Estonia (4%), are among the EU countries with the highest incidence of virtual work self-employed.

Figure 2. Incidence of VIRTUAL WORK in EU countries by employment status, 2015 (%)

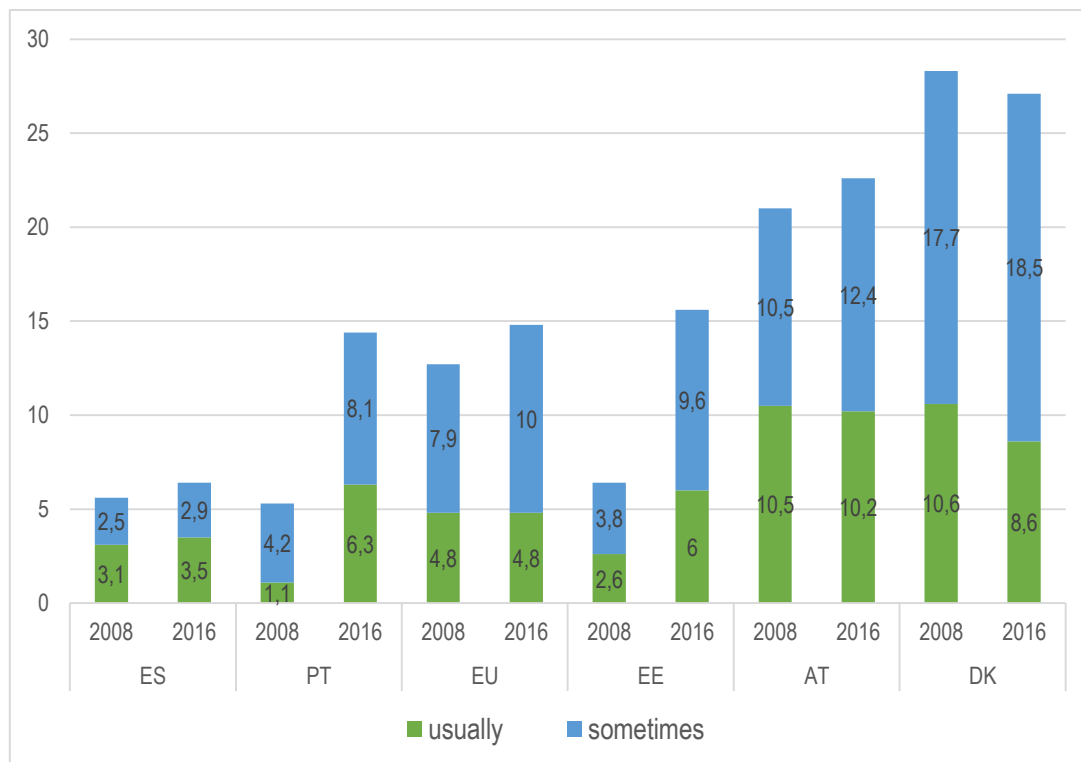


Source: European Working Conditions Survey, 2015

Data breakdown of the EWCS does not allow for the comparison of the incidence of TICTM at sectoral level (financial activities, computer programming, consultancy and related activities and care activities), due to the small sample size.

Another available source for assessing the incidence and trends of virtual work is provided by the EU Labour Force Survey, although it only applies to one specific virtual work arrangement, namely **home-based telework**. The estimation for the period 2008-2016 shows a general trend towards the extension of this work arrangement, which is especially acute in the cases of Estonia and Portugal, the countries with the lowest initial figures. In both cases the share of employees working from home sometimes/usually over total employment almost tripled from 2008 to 2016 (from 5% to 15% in Portugal; from 6 to 16% in Estonia). Austria (22.6%) and Denmark (27.1%) stand out as the cases where these work arrangements are more prevalent. Moreover, the share of teleworkers among employees has remained stable throughout the period in both countries. Conversely, Spain is the country with the lowest share of teleworkers, either occasionally or on a regular basis (6% in both years, 2008 and 2016)

Figure 3. Employed persons usually working from home sometimes/usually as a percentage of the total employment, (%) 2008 and 2016



Source: Labour Force Survey, Employment and Social developments in Europe 2018

Further analysis on the basis of the LFS results at national level is provided in the following section. Here it should be pointed out that the results reported for Austria, Denmark and Estonia differ in the breakdown levels and the period considered. The harmonised questionnaire of the European LFS only refers to the item ‘Working at home’ (usually/sometimes) but this may be supplemented in national questionnaires with additional questions regarding the main place of work and the frequency and intensity of mobility patterns across different work locations, such as in Austria. The Estonian questionnaire for 2012 includes specific questions on telework intensity. Furthermore, in some cases it is not possible to assess the trends on the incidence of telework due to the break of time series.

2.1 National sources analysis

Overall, there is a general lack of national data sources on the incidence and trends of Virtual Work. The methodological approaches to the issue are mostly based on the number of work locations and mobility patterns. References to the use of ICT and mobile devices is lacking in some cases. The diversity of terms and of ways to operationalize them in national sources hinders comparability of results.

In **Austria**, the most recent statistics available are based on an ad-hoc module on ‘Work organisation and working time arrangements’ in the framework of the Labour Force Survey (2015). The ad-hoc module contains three sub-modules on working time, work organisation and ‘main place of work’ by socio-demographic and employment-related groups. The target group of the module consists of all people in employment over 15 years old in private households. The estimates show that most employees work at the employers’ premises (83.5%). Statistics show that 5.8% of employees work on clients’ premises; a similar share of workers do it outside the employers’ premises (5.2%); 3.3% in a car or vehicle; and only 1.6% at home (1.6%). Women work at the employers’ premises more frequently than men: men 75.5% women 92.2%.

Data from **Austrian** LFS shows that 32.5% of all employees in Austria work both, at the employers’ premises and in alternative locations at least once a week: 10.1% work from home while 22.4% work at alternative workplaces. The proportion of employees reporting working in at least two different workplaces is larger for men (40.8%) than for women (23.8%). It is also

larger among the self-employed (70.9%). With regard to women reporting to work at least occasionally in an alternative workplace, 11.7% work at home while 12.1% work at another place (12.1%). Male employees more often work at a different place (32.1%) than at home (8.7%). One third of employees had another working place, which was used by them at least once a week (63.9%) (Statistics Austria, 2015). The survey also provides estimates on the intensity of mobility patterns across different sources. About 64% of the employees who had another working place used this workplace at least once a week (63.9%), 17.9% at least once a month and 18.2% less often (Statistics Austria 2015). Data on trends is missing due to a break in the statistical series.

The national institute of statistics, Statistics Austria, cancelled all questions regarding telework in the micro census survey from 2003 onwards, proving a loss of general interest on the issue. Therefore, most recent available figures refer to 2002. The figure for that year was equivalent to the 7.7% of total workforce.

In **Denmark**, data sources have been focused on home-based telework. The Statistics Denmark (Statistikbanken) provide figures covering workers that have been working at home 'minimum once in the last four weeks'. In this regard, data for the period 2008-2017 shows an increasing trend of the incidence of telework from 26.6% to 29.1%, albeit with slight decrease in 2013-2015. Most recent data on virtual work was published in December 2018. Statistics Denmark published the annual survey on 'IT use in the population 2018' (IT-anvendelse i befolkningen 2018). In the survey, ICT use is defined either as the use of computers (desktop or portable), smartphones, and tablets or as other mobile devices at work or as use of computer-controlled systems, machines, etc. ICT for work purposes includes homework and work on the road (in town, at customers, etc). Respondents were also asked about the frequency of work done outside their normal workplace (daily or almost daily, at least once a week but not every day, less than once a week and never). According to the survey, 11% of the employees do regular home-based telework (daily or almost daily), while another 13% do it at least once a week but not every day. Just over every second employee makes use of the opportunity to be able to work from home, while 39% state that they never work from home. The frequency of work done "on the move," with customers or at an external workplace, resembles the frequency measured for homework: One in two works at an external location at least once a week, and four out of ten never do. Alternative information sources are provided by social partners, but these are only related to home-based telework. According to one of the main unions of ICT professionals in Denmark, PROSA, 51.3% of its members had worked from one to four days at home during January 2018, and 11.1% had worked for more than five days in the same period.

In **Estonia**, the main national publication uses data from EWCS (Holts, 2018).

In **Portugal**, an alternative approach to the EWCS for assessing the incidence and trends of virtual work arrangements is provided by the *Quadros de Pessoal* (Personnel Records) for the period 2010-2016. This source of administrative information only provides information on country-specific type of legal contracts for home-based telework. The source reveals a declining trend in the use of home-based telework contracts. The total figure of this type of contracts reduced from 2,431 to 851 throughout the period considered (2010-2016). These records contrast with evidence from EWCS regarding mobility patterns and ICT usage, that suggest an increase of virtual work arrangements over the same period. It also contrasts with data on home-based telework from the European Labour Force Survey. Therefore, telework contracts appear not to be a reliable indicator to assess the actual extent of virtual work, since most of these work arrangements can be indeed adopted in the context of other agreements or informal practices.

In **Spain**, an alternative national source that provides relevant information is the 'Survey about ICT and Electronic Commerce use in Companies', conducted by the National Statistics Institute (INE). However, the survey has frequently modified the questionnaire, in particular those questions through which it is possible to estimate the number of companies having Virtual Work arrangements. The 2008 survey (January) provided data on the percentage of companies with employees connected to the company's ICT systems by external telematic networks

(14.7%). This has been taken in some publications as an indicator of the spread of telework in Spain (Aragón, 2010). With a view to compare its evolution in successive years, the closest indicator to the one available for 2008 appears in the 2013 survey. The 2013 survey provides data on the percentage of companies that had employees who worked outside the company premises on a regular basis (at least half a week) and connected to the company's ICT systems through external telematic networks (27%). Data show a relevant increase in the percentage of companies with some kind of Virtual Work arrangement. Since 2013 onwards, this question has not been replicated in the survey.

National sources and methodological approaches to measure virtual work (telework, etc.) can be consulted in Annex 1.

3. Research on working conditions of virtual workers

Implications of digitalisation on the labour market has received increasing attention from different disciplines in recent times. Research on working conditions is rather imbalanced. Telework has been studied extensively for its capacity to contribute to different forms of working time and locational flexibility and its impact on *work-life balance*. Overall, meta-analysis studies (Allen et al, 2015) and literature reviews (Dén-Nagy, 2014) confirm that there is little empirical evidence on the overall positive effects of telework on *work-life balance*. In particular, Dén-Nagy (2014) highlights that teleworking arrangements may lead to blurring boundaries between life and work and increased interferences in both directions, with positive and negative effects on work-life balance.

As an extension of this strand of research, issues related to *health and well-being*, and *work satisfaction* have also been addressed. Virtual Work and the use of mobile ICT devices at work (ICT mobile work) has recognised effects on different health dimensions (Tavares, 2015; European Commission, 2010). Virtual Workers are exposed to different working environments than on-site workers because of the use of technology and because working from home may lead to conflict with family roles and responsibilities, which differ by gender and depending on the kind of cohabitation in the household. Work overload and work-home conflict are the two most common stress factors related to telework (Weinert et al, 2015). According to a recent Eurofound study (forthcoming), the typical working conditions of Virtual Workers can have consequences for the health and well-being of workers. Stress, sleeping problems and perceptions of negative impacts of work on health occur more often among high mobile workers and home-based teleworkers.

Research has paid less attention to other working conditions such as *skills, earnings* and *career prospects*. A recent Eurofound research (forthcoming) suggest that Virtual Workers are more likely to report career prospects, have higher wages and are more likely to participate in on-the-job training. However, the study also highlights different effects observed among the distinct groups of Virtual Workers (occasional, high mobile or home-based teleworkers). For instance, home-based teleworkers have fewer opportunities for learning and training (Eurofound, forthcoming).

The next section summarises the main evidence on the impact of work arrangements which enable working time and space flexibility through the use of ICT (laptops, smart phones, etc.) in working conditions. The main focus of the review is placed on the five countries and three sectors covered in the DEEP VIEW study. The section mainly draws from information provided in the national reports.

3.1 Virtual work and working conditions: state of the art at cross-sectoral national level

The incidence of Virtual Work and its implications for the working conditions of the workers concerned has not been extensively addressed in recent academic literature in the five countries covered in the study. Some national approaches to the issue are found under the Eurofound research on the extension and development of new forms on employment and European data

sources (Eurofound, 2015) or ICT-based mobile work (Eurofound and ILO, 2017; Eurofound, forthcoming).

In Austria, research on working conditions of virtual workers is rare. Moreover, public attention and research interest on the issue of virtual work has declined over the same period in which the most salient features of telework arrangements have become embedded in the working practices of a vast majority of workers. Research has referred to this development as ‘tacit telework’ (‘stillschweigende Telearbeit’). The loss of relevance of telework led the national statistical office Statistics Austria to cancel all questions regarding this form of work in the surveys from 2003 onwards. In the last decade research has focused on technological developments with regard to restructuring, outsourcing, offshoring processes, global value chains and new forms of employment (platform work, etc.)

In Estonia, the Foresight Centre commissioned a study by the Parliament with a view to analyse long-term developments in society, identifying new trends and drafting development scenarios on the ‘future of work’³. To this aim, different research studies have been carried out which are relevant from the perspective of ‘virtual work’. A study on the development of new forms of employment conducted on the basis of Eurofound’s typology concluded that ICT-based mobile work is the most widespread form of virtual work arrangements in the country and that it is mainly found in small and medium sized companies, mainly associated to the figure of ‘digital nomads’ (Vallistu, Erikson et al 2017). Another research on the extension of flexible working practices in Estonia on the basis of the European Company Survey and the EWCS showed a great occupational segregation for teleworking practices, mostly reserved for managers and associate professionals. The research also found that teleworkers experience higher levels of work-family conflict compared to those that do not telework (Chung, 2018). On the other hand, another research on the spread of virtual work in Estonia, a concept which in the study encompassed telework and other online activities, pointed out that, in the absence of reliable data on the extension of virtual work arrangements, virtual work was associated with deepening of pre-existing trends towards the growth of atypical forms of employment, the individualisation of risks (income instability and working time unpredictability) and trends toward self-management of labour market uncertainties (Holts, 2018).

In Denmark, actually the highest digitalised country in Europe according to the DESI report (2018), the issues related to virtual work and working conditions are far from standing highest in the agenda and there is little debate or attention about this particular form of work. Only trade unions have delivered significant input to a policy debate about virtual work in the context of the broader debate of ‘borderless work’, and partially on the implications of precarious employment. The main contribution in this regard is a publication from the Confederation of Professionals (FTF) that organises the employees in knowledge-intensive services (FTF, 2017). Borderless work is defined as work lacking both time and place borders and the risks involved by these work arrangements result from the same working time and place flexibility, demanding both personal discipline but also a supporting environment to cope with the risks of increasing workload and overtime. This publication stands alone.

The research on the effects on virtual work and working conditions in Denmark is focused on the working environment of ‘virtual teams’ and in connection of ‘virtual management’ from a clear business and HRM approach. The main contribution in this regard are two publications from the project ‘Virtual management, working environment and social capital’: *Virtual management and working environment, vol. I and II* (Holt et al., 2016). They focus on management and coordination of working teams in which the employees are geographically dispersed across different locations and only meet occasionally. Significantly, one of the main findings reported based on a survey in four large companies is that virtual meetings happens relatively rarely, meaning that communication within virtual teams mainly takes place at physical meetings.

³ Foresight Centre <https://www.riigikogu.ee/en/foresight/>

In **Portugal**, most of the scientific production on the working conditions of virtual workers in the last decade was published in PhD thesis and Master dissertations, and less attention has been paid by scientific journals. In spite of being one of the first EU countries addressing the regulation of telework through the provisions of the Labour Code in 2003 (art. 166), the recent evolution of telework arrangements in the country is reported to be increasing among independent workers as services providers for companies rather than employees adopting this work arrangement (Gil, 2015). Other authors point out that the extension of virtual work and other flexible working practices is hindered by the prevalence of traditional organisational culture (Crueira, 2015) together with the lack of digital literacy skills of the workforce, that may be also a constraining factor for the adoption of telework practices by companies (P. A. F. dos S. Almeida 2006a). National research has also dealt with the contributions of virtual work in the shaping of information society, the greater autonomy and flexibility enjoyed by teleworkers in the performance of their jobs and the adoption of different lifestyles enabled by flexible technologies (Nunes 2007).

In **Spain**, the most comprehensive approaches to the implications of virtual work on working conditions are issued from the perspective of Labour Law, such as the regulation of telework practices and different issues related to the use of ICT through collective bargaining (Rodríguez-Piñero et al., 2006; Rodríguez-Piñero, 2017). However, little progress is reported on the empirical analysis of the impact of virtual work arrangements on working conditions. On the other hand, the debate on telework and remote work has given way to the implications of the most innovative forms of virtual work, namely those stemming from employment on digital platforms and the ‘gig economy’. A recent publication from the prestigious legal publishing label Aranzadi deals extensively with critical issues entailed by this form of employment, such as those concerning the employment status of platforms workers and the discussion on the potential role of trade unions and collective bargaining in regulating this employment form (Todolí, 2018).

Empirical research approaches on the specific impact of virtual work on working conditions dated from early 2000. As an example of this strand of research, the work by Belzunegui (2002) dealt with the implementation of teleworking and *mobility* arrangements in companies of computer services and teleoperation subsectors and its implications regarding the fragmentation and individualisation of work organisation and working conditions, which ultimately are ongoing organisational strategies reinforced by the adoption of ICT.

Currently, the debate on the impact of digitalisation in the labour market and working conditions in Spain is fostered by trade union organisations and social dialogue institutions, such as the Economic and Social Committee (CES, 2018). The terms of the debate are in line with the international agenda, such as the implications for the quality of employment – decent work (Rocha, 2017) and the more general concerns on the Future of Work (CES, 2018). However, as for the rest of the countries considered in the project, empirical approaches on the implications of virtual work on the working conditions of workers in different sectors is lacking in the research literature.

3.2 Virtual work and working conditions: state of the art in the sectors considered in the research.

The implications of virtual work arrangements on working conditions in the three sectors considered are not specifically addressed in the research literature but under the most general heading of ‘digitalisation’ (Holtgrewe and Haider, 2018). Furthermore, it is worth noting that most of these references tend to focus on the challenges brought by new competitors (such as *Fintech* in the banking sector or the intrusive nature of services provided through online platforms). Less attention is being paid to the impact of virtual work on job quality and working conditions, especially with regard to the interest aroused by this issue in early 2000s (Rubery and Grimshaw, 2001).

3.2.1 Homecare sector

The ‘virtualisation’ of health services is a relatively recent phenomenon in comparison to other industries. Accordingly, questions are raised in the literature about the impact of ICT on healthcare providers, patients or potential users.

A recent report by the European Social Observatory (OSE) commissioned by the European Public Services Union (EPSU) deals with the outcomes of digitalisation in the home care sector and in the public employment services sector. The adoption of digital tools and mobile devices in the homecare services is rather recent and it is said that it has had a very limited impact on the core tasks of the jobs. This may be the reason for limited attention devoted to the impact of digitalisation on these types of services (Peña Casas et al, 2018).

Needless to say, some of the terms most often used to refer to virtual work arrangements, namely telework, do not apply to the specificities of the homecare sector. The provision of homecare services necessarily takes place at the client’s home. Furthermore, the users or their relatives might also be the employer of the homecare workers, depending on the service arrangement. It is also widely acknowledged that this job feature (the use is the employer and the workplace is at her/his home) determines the working conditions and well-being of homecare workers (Denton et al, 2002). Because of the blurring boundaries between the professional nature of the job and the private nature of the workplace, care workers are permanently confronted with the risk of professional isolation and exposed to clients’ demanding requests. In addition to hard physical work, homecare work is also characterised by high levels of mental and physical stress because of the lack of influence in work organisation, combined with increasing workloads which lead to work-related stress and burnout (Jelenko et al. 2007, Krenn et al. 2010, Flecker et al. 2013, Arbeiterkammer Oberösterreich 2013). On the other hand, changes in the social organisation of homecare services due to healthcare restructuring policies and organisational change is resulting in increased informalisation and de-professionalisation of homecare work, mainly because of the entry of new private operators in the sector (Eurofound, 2015; Gorfinkiel and San Miguel, 2015).

Based on a systematic review of literature, Lindberg et al (2017) describe how ICT is used for communication purposes, analysing the benefits and drawbacks of the use of ICT in homecare. eHealth appears as an umbrella concept embracing both the use of electronic and information and communication technologies in healthcare (the use of other frequently used concepts such as telehealth and telecare is referred in the literature to the use of other types of electronic technologies). ICT tools can be used by healthcare professionals or directly by patients and relatives for technological solutions of communication, diagnosis and treatment at a distance and retrieving health records. mHealth or mobile health is a component of eHealth and can be defined as a medical public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs) and other wireless devices⁴.

Research is scarce about the impact of these new forms of organisation on the provision of healthcare services. The alleged benefits of eHealth/mHealth for the improvement of healthcare services encompass a better availability, accessibility and acceptability (AAAQ) of the health workforce (Lapao and Dussault, 2017)⁵. The literature is not conclusive about the potential use

⁴ Global Observatory for eHealth mHealth. *New horizons for health through mobile technologies*, http://www.who.int/goe/publications/goe_mhealth_web.pdf

⁵ Availability is defined in terms of increased capacity to provide services to more users at a lower marginal cost. Accessibility improves with the capacity to diagnose and monitor patient conditions through mobile devices. This has also the potential for the development of homecare services. eHealth/mHealth services make communication with patients easier, more direct and adapted to user’s needs, thereby potentially enhancing the acceptability of workers/providers and, finally, eHealth/mHealth tools give providers rapid access to valid information, second opinion and guidelines which contribute to

of ICT in homecare for cost saving. This is because the use of ICT cannot fully replace the face-to-face interaction and, although the costs of the technology tend to decrease in the future, the demand for new categories of healthcare professionals will also rise.

Little empirical research has been conducted on the impacts of the introduction of telehealth on working conditions in the homecare sector. An example of this singular strand of research is provided by Sharma et al (2014). The authors conducted a longitudinal study on the introduction of a telehealth service in Nottingham (UK) using focus groups with different types of workers. Results show that the workers experienced disruption due to the implementation of telehealth because they perceived it as threatening in three aspects of their performance: (1) daily work routines, (2) interaction with patients and (3) skills set and expertise. First, telehealth was reported to have added additional workload because of the equipment installation and initial training and patient assessment. Second, workers reported less face-to-face interaction causing loss of personal touch and contributing to the risk of missing important symptoms. The third element raised from workers' reflections was that expertise was undermined and challenged with the introduction of telehealth system and insufficient training.

Following the comments gathered in national focus groups in the homecare sector conducted in four European countries (France, Spain, United Kingdom and Italy), Peña Casas et al. (2018) report a global positive contribution of digital devices to the improvement of work organisation. By introducing digital devices, companies can centralise information, improve management of working time and monitor workers. However, side-effects related to the use of new ICT are also pointed out with regard to sudden changes in the work schedule and other problems related to the recording of working time. This highlights a relevant research question related to the implications of the use of new ICT by an already mobile workforce, whether they contribute to enhance workers' autonomy over their immediate activities or if it triggers the intensification of work through a new kind of pervasive control of employees.

Mobile devices such as PDA record relevant information from home visits which is subsequently used to estimate total working time for homecare workers. However, the research reports that many workers regret that these records hardly reflect their total working schedule for different reasons: 'Social time' spent on personal interaction with the users of the service is not properly taken into account in the estimates of the necessary time for the service. Standby availability times are also poorly integrated into the official working schedule. Moreover, the time required for commuting between the users' homes is also underestimated, especially with traffic jams. The research from la Cour et al. (2016) on the use of PDA on the provision of elderly homecare services in Copenhagen reported different strategies adopted by homecare workers for coping with their impossible time schedules, such as manipulation of the time records and the services delivered.

The report from EPSU gathers different views from workers in the sector expressing their disagreement with the increased standardisation and work intensification related to the digital monitoring of their working schedule. In a similar way, some workers reported a negative effect on communication with co-workers and supervisors through digital channels. A general agreement on the weakness or even absence of specific training for the use of digital technologies is also reported. The impact of the use of digital devices is also evoked with regard to mental health risks (fatigue and stress resulting from the need to regularly consult a schedule and for being permanently available to requests from users, colleagues or supervisors).

Finally, the report also states that there is no integrated approach to the impact of digitalisation on working conditions, since most of the workers report a general lack of awareness and insufficient attention devoted to the issues related to digitalisation in collective bargaining processes.

widening competencies and compliance with professional standards, thereby improving patient safety and service effectiveness (quality).

In a nutshell, findings suggest that ICT may impact on the interactions with service's users or patients. Likewise, it may also affect the skill requirements of the job and may produce negative effects on working conditions of home health workers, mainly related to an increase in surveillance and stress intensification. It is also worth highlighting the lack of attention devoted by collective bargaining to these issues. This last aspect will be further explored in the fieldwork phase of the DEEP VIEW project.

3.2.2 Financial and ICT sectors

The implications of virtual work arrangements in the financial and the ICT sectors have received greater interest. Knowledge intensive services are the most compatible with the adoption of virtual work arrangements, as the information is easily digitalised and possible to manage remotely. The ICT sector is characterised by high working time flexibility. In Austria, following the results reported from Austrian Labour Force Survey, 36% of the employees in ICT companies were asked to change their working schedule at least once in a week. Furthermore, more than a third (33.5%) of the employed persons in the sector were contacted for work purposes outside normal working time for work purposes at least twice within two months. On the other hand, most of the ICT employees reported to find it easy to take some time off for personal or family issues at short notice, but it is also acknowledged that this flexibility is only granted as long as the deadlines of the project are met (Krenn et al., 2010).

A report issued in 2016 by the International Labour Organisation (ILO, 2016) states that if telework is not as widespread in financial services as it could be, this is rather related to concerns such as cyber security, regulatory constraints and management resistance rather than to the lack of technical means. Indeed, the rise of the FinTech industry shows the great potential of ICT-enabled work to fundamentally alter the way the financial business operates. On the other hand, both employers and workers in the financial and ICT sector mention alleged benefits and challenges when adopting telework arrangements.

For businesses, telework is said 'to expand their pool of skilled workers, reduce the spread of illness (by enabling sick workers to continue their work from home)' (sic.). Other advantages are expressed in terms of savings and reduced costs, mainly in terms of real estate expenses and energy consumption, reduced turnover and absenteeism and, ultimately, for its contribution to improve staff morale. Conversely, teleworkers may gain from better work-life balance and savings from reduced commuting. However, in the absence of collective regulation, teleworkers may be exposed to a number of risks, some are related to a sense of isolation and other psychosocial issues, others are of more material nature and, specifically, to the cost transfer from the employer to the employee (real estate, energy and the cost of ICT equipment). Another well documented risk derives from the potential work intensification if the right of teleworkers to 'disconnect' is not explicitly regulated (ILO, 2016).

The UNI Europa project 'Shaping Industrial Relations in a Digitalising Services Industry'⁶ provides an understanding of change factors and current transformation processes in the EU services industry and explores new approaches for social partners. The project specifically addresses the impact of digitalisation on company strategies and work organisation from the understanding that digital technologies may be implemented in alternative ways, depending on the context and constraints where companies operate (Holtgrewe and Haider, 2018).

Digitalisation is considered an enabling factor for further offshoring, outsourcing and the transnationalisation of work organisation, especially in the ICT sector, where these strategies have become more systemic. Another trend reported in the EU services' workforce is the 'trend to increasingly work from home or in a mobile way'. From a union perspective, these work arrangements tend to be more critically perceived than by the workers themselves. It is argued

⁶ Project reports of UNI Europa (European services workers union) are available at: <https://unieuropaprojects.org/shaping-industrial-relations/>

that *'the representation of the mobile work issues in collective agreements needs closer attention. Only certain professions have regulated their approach to mobile work in collective agreements. This leaves other professions open to unbalanced agreements between workers and employers in favour of the latter. Unions need to be aware of this situation and the needs of their members and treat mobile work accordingly'* (Holtgrewe; Haider, 2018: 12).

4. Regulation and policy approaches to virtual work at cross-sectoral national level

Prior to analysing the regulation and policy approaches to virtual work in the five countries analysed, it is worth briefly describing industrial relations patterns and specificities of the five countries to be studied in the project. Overall, the five countries selected are representative of different industrial relations clusters (Visser, 2009; Eurofound 2018).

Spain and Portugal have been generally classified under so-called state-centre model of industrial relations, with stronger dependence on state regulation. In both countries, collective bargaining coverage is relatively high, close to 70% according to ICTWSS data (2013, last year available), within centralised but quite uncoordinated collective bargaining institutions, with greater dependence on state regulation. A high degree of state intervention in collective bargaining and employment regulation is matched in these two countries with low trade union densities (Eurofound, 2018)

Austria is classified, together with central-western European countries, as 'social partnership' model (Visser, 2009), with relatively weak trade union organisation (27% of density rate in 2013 according to ICTWSS data) but centralised levels of collective bargaining ensuring high coverage (98% in 2013 according to ICTWSS data), and highly institutionalised forms of employee representation at the firm level (Eurofound, 2018).

Denmark, as the remaining Nordic countries, is defined as a model of 'organised corporatism' with strong traditions of labour market regulation based on powerful central organisations of unions (67% in 2013 according to ICTWSS data) and employers. Accordingly, this country records high collective bargaining coverage (84% in 2013 according to ICTWSS data)

Finally, Estonia has been classified within a residual, less clearly defined 'Mixed' or 'Transitional' model in post-communist central eastern Europe (Visser, 2009). Most recent classifications define Estonia as a 'market oriented' model, characterised by low levels of collective bargaining (23% in 2012 according to ICTWSS data) and rare or absent concertation. At institutional level, Estonia presents a very uncoordinated and decentralised collective bargaining system.

4.1 Virtual work regulation

Main European regulation addressing virtual work has been focused on telework. The regulation of telework as a flexible form of work organisation enabled by new technologies was accomplished in year 2002 through the conclusion of an autonomous agreement of the European social partners. It was one of the first two autonomous European-level agreements to be implemented according to the 'procedures and practices' specific to each Member State. This is one of the two options for the implementation of EU agreement provided in the Treaties and it compromise the affiliated national organisations to implement the agreement in each appropriate level of the system of collective bargaining of their respective countries. In contrast to the incorporation of EU directive into national law, this form of implementation is not legally binding and so greater diversity is expected in its implementation and effectiveness, given the diversity of national contexts of industrial relations.

Different paths have been pursued for the regulation of telework at national level since the adoption of the EU framework agreement, either through social dialogue and collective bargaining or by state regulation. Furthermore, the balance between both sources of regulation has changed over time in some of the countries considered.

In Austria, the social partners have largely implemented the provisions of the European framework agreement on telework concluded under Article 139 EC, by including clauses on telework in the majority of Austria's sectoral and industry-wide collective agreements. Thus, an estimated 90% of all private sector employees have been covered by such collectively agreed provisions on telework. In general, these regulations are more comprehensive than the 2002 EU framework agreement. Therefore, the Austrian Trade Union Federation (Österreichischer Gewerkschaftsbund, ÖGB) has always emphasised that the EU framework agreement is setting absolute minimum standards, so that the usually higher level of regulation in Austria should not be questioned.

In order to make the EU framework agreement legally binding for all employees in the country, trade unions have sought to include encompassing rights of teleworkers in the Labour Constitution Act (Arbeitsverfassungsgesetz, ArbVG), similar to the legal provision in Article 97/1 of the ArbVG on temporary agency work. Since the Austrian Federal Economic Chamber (Wirtschaftskammer Österreich, WKO) strictly opposed any legally binding regulations laid down by national law, this initiative has failed so far. Therefore, in the private sector the 2002 EU framework agreement on telework has not yet led to any legislative amendments in Austria.

Until now there is no specific legislation on the issue of telework in Austria. According to widespread opinion, labour law is generally applicable to teleworkers. The Austrian Federal Economic Chamber (WKO) welcomed the 2002 EU framework agreement on telework, since it did not restrict the necessary flexibility of teleworkers by 'over-regulation'. In general, the chamber has considered telework as a form of flexible and modern work organisation which might help enterprises to become more productive and competitive. In order to maintain this flexibility, the employer organisation has refused to introduce a nationwide, uniform legal regulation on telework, as demanded by the trade unions.

In Denmark, where collective agreements on telework, homework or distance work had been in place since the beginning of the 1990s, the implementation of the EU framework agreement was accomplished in 2005, as a protocol attached to the Industrial Agreement, which is the pace-setting collective agreement in the Danish private sector. Currently, the EU social partners' agreement on telework is implemented in around 90% of all sectoral agreements. The Protocol on tele/distance/homework included in the Industrial Agreement, specifies rights and working conditions of the tele/home/distance workers. Telework' is understood as work undertaken by the use of ICT within the framework of an employment contract or employment relation, where work that could be undertaken at the premises of the employer, is undertaken at another place on a regular basis (nothing about *how* regular). 'Distance and homework is understood as work performed outside the employers' premises, but *without* the use of ICT. The agreement provides the same specific rules for the three categories: telework, homework and distance work:

- *Equal rights for Tele/distance/homeworkers and traditional workers:* 'Tele/distance/homeworkers have the same collective rights as employees working at the employer's premises, for which reason no obstacles shall be put to the communication between those employees and the employee representatives elected at the enterprise concerned, including the shop steward(s), the safety representative(s), etc.'
- *Training and career development:* Tele/distance/homeworkers shall receive appropriate training in the use of the equipment made available and in the special conditions characterising this form of organisation of the work. The tele/distance/homeworker's supervisor and his/her direct colleagues may also need training for this form of work and its management. The agreement also states that tele/distance/homeworkers shall have the same access to training and career development opportunities as comparable employees at the employer's premises, and they shall be subject to the same appraisal policies as these other employees."
- *Health and safety:* the protocol contains provisions with the aim to secure the wellbeing of the tele/distance/homeworkers. The employer shall ensure to take measures with a view to

preventing tele/distance/homeworkers from being isolated from the rest of the working community at the enterprise, such as giving them the opportunity to meet with colleagues on a regular basis and access to information about the enterprise. The agreement also establishes that the employer is responsible for the protection of the health and safety of the tele/distance/homeworker in accordance with the Danish working environment legislation.

- *Data protection:* The employer is responsible for acting appropriately, particularly in connection with software, with a view to ensuring protection of the data the tele/distance/homeworker uses and processes in connection with his/her work.
- *Privacy rights:* The employer shall respect the tele/distance/homeworker's right to privacy.

In the public sector, the main collective agreement is the one concluded between the Ministry of Finance and the Danish Central Federation of State Employees' Organisations (CFU). Work in the public sector falls under the general coverage of this central agreement regarding working conditions. This agreement regulates 'distance work', which is defined as follows:

- Distance work is work performed outside the normal workplace by means of a PC, electronic communication or other equivalent material made available by the employer. Thus, distance work here is defined as telework in the Industrial Agreement. The phrase 'outside the normal workplace' indicates work also outside home, but in practice, the phrase encompasses homework.
- Work performed as a distance work must have a permanent recurring character in order to be covered by the agreement and may only take place during a part of the agreed working time.
- Work during posting and missions is not considered as distance work.

Distance work does not include mobile work, that is work performed by employees with changing workplaces, or for instance drivers or chauffeurs. In terms of working conditions of so-called 'distance workers', collective agreement only establishes equal rights for distance workers and traditional workers in terms of pay, employment terms and working time. Although there might be local level agreements supplementing the central regulation, there are no reported significant developments on this issue (Larsen and Andersen, 2007)

In Estonia, national peak level social partners were involved in the drafting process of the new Employment Contracts Act in 2008 which introduced the concept of telework (remote work) into the Estonian Labour Law. More recently (June 2017), however, Estonian social partners concluded a cross-sectoral national agreement on teleworking, since the parties argued that the current legislation was a cause for disputes and ambiguity. The agreement includes 10 'rules' related to teleworking stating that teleworking is voluntary and based on an agreement that can be cancelled, and that all employees with similar responsibilities should have similar possibilities for teleworking⁷. For employers, the most troublesome part of telework is related to

⁷ The joint agreement on teleworking between EAKL and ETTK also states that teleworkers have to follow the information and safety rules set by the employer. Also, that teleworkers get their working equipment from the employer and they have to use it in accordance with the rules and guidelines set by the mutual employer. Also, that employee should not experience any decrease in their income due to teleworking, meaning for example, that increase in expenses related to commuting should be reimbursed by the employer if these are done to fulfil work assignments. A teleworker is always responsible for following the health and safety rules set by the employer. Both the employer and the representative of employees will have to be able to check the following of these rules. Another rule is related to working time, stating that in accordance with the assignments, employee should be free to choose the working hours. Also, that teleworkers have the same rights to participate in work-related education and training, have access to information regarding assignments and should have the possibility to attend regular meetings, elect employees' representatives and be nominated at the elections and be taken as a regular colleague and not feel isolated from other employees.

English version of the Agreement available at: <https://www.workinestonia.com/teleworking-agreement-signed-setting-rules-teleworkers-employers/>

health and safety issues and more specifically, how to ensure employees' health and safety when working outside employers' premises. For that, social partners agreed that teleworkers have to follow the information on safety rules set by the employer, and that the teleworker is always responsible for following the occupational health and safety rules set by the employer. Additionally, it establishes that employer and employees' representative will have to be able to check whether the employee is following the rules. In April 2018, the Ministry of Finance concluded a telework agreement with Trade Unions of State and Municipal Agencies Employees (*Riigi-ja Omavalitsusasutuste Töötajate Ametiühingu Liit*, ROTAL) stating that the public sector must develop hand in hand with the private sector and be more flexible in working conditions⁸. The agreement resembled a social partner telework agreement and referred to the same principles.

Portugal was one of the first EU countries to adopt the EU framework agreement through legislation in 2004, although with no consultations or participation by social partners, that were reluctant to the statutory implementation route. More recently, in 2017, the Portuguese government refused a parliamentary proposal from the Christian-Democrats (CDS) opposition to regulate telework on the grounds of the preservation of social partners' autonomy. According to the article 165 of the 2009 Labour Code, 'telework shall mean work rendered under legal subordination, usually outside the employer's premises and with resource to ICT'. Portuguese Law also sets a fixed-term contract for subordinated telework, named '*regime de contrato para prestação subordinada de teletrabalho*'. The contract must contain the duration of the work under a telework regime, the ownership of the work instruments to be used by the teleworker as well as the indication of who is charged with the installation, maintenance and payment of the costs incurred in the provision of telework. The teleworker may be a worker who previously had another function in the company, or a worker contracted as a teleworker from the very beginning. In the case of a worker with a previous contract with the employer, the initial duration of the contract for subordinate teleworking service cannot exceed three years, or the term established in a collective labour regulation instrument. At the end of the contract, the employee retakes the previous work, under the terms agreed or provided for in an instrument of collective bargaining (art. 167).

In **Spain**, social partners played the main role in the regulation of telework until 2012, due to the lack of specific state regulation on the issue. Social partners' predominant function was favoured by the EU framework agreement on telework. The procedure of implementation chosen by social partners was the Cross-sectoral Agreement for Collective Bargaining' (30th of January 2003) and its successive renewals. This kind of agreements only provide non-legally binding recommendations and guidelines for lower level collective bargaining, being considered softer forms of regulation than sectoral or company collective agreements. The cross-sectoral 'Agreement for Employment and Social Dialogue' signed for the years 2012-2014 and 2015-2017, establishes the same three criteria that should be used by employers and employee representatives:

- voluntary character and reversibility for both employer and employees;
- equal rights between teleworkers and traditional workers;
- importance to further regulate aspects such as privacy, confidentiality, health and safety, training, etc.

The application and development of the criteria on telework developed in the cross-sectoral agreement has been scarce, mainly applying to a few collective agreements (Aragón, 2010; Ferreiro, 2015). In 2016, lesser than 5% of company agreements and 3% of sectoral agreements included a clause on telework, according to Collective Bargaining Statistics of Ministry of Employment.

⁸ Ministeerium sõlmis riigitöötajate ametiühinguga kaugtöö kokkuleppe
<http://www.pealinn.ee/tagid/koik/ministeerium-solmis-riigitootajate-ametiuhinguga-kaugtoo-kokkuleppe-n220104>

The main political intervention on virtual work in Spain is associated with the modification of the Article 13 of Spanish Workers' Rights Statute in 2012 concerning the regulation of 'distance work' approved by the Popular Party Government within a broader labour market reform passed by Law 3/2012 without any consultation or bargaining with social partners⁹. The new term of distance work replaced the previous term of homework, being defined as '*work that is carried out predominantly in the home of the worker or in the place freely chosen by her/him, as an alternative to her/his work carried out in the employers' facilities*' (Law 13/2012 Preamble. Article 13. Spanish Workers' Rights Statute). Three main elements of the legal definition of distance work deserve particular attention. Firstly, distance work is not regulated as a labour contract, as it is applied to the previous category of 'homework'. It is therefore considered as a work arrangement, in line with the EU framework agreement. Secondly, the exact meaning of 'preponderantly', as it determines the frequency or regularity in which an employee must work outside the employers' premises to be considered 'distance worker'. Regarding this issue, case law has established that, to be considered 'preponderant', working time outside the employers' premises has to be of at least 20% of the regular working time. Thirdly, the potential places of work to be covered are the home or any place '*freely chosen by the employee*'. Some authors argue that 'distance work' excludes those 'mobile teleworkers' who cannot freely choose their itineraries (Lousada and Ron, 2015).

Beyond introducing the new category, Article 13 specifies labour rights and employers' obligations for distance workers in the following fields:

- *Written agreement*: distance work will be formalised with a written agreement even if this work arrangement starts once the initial contract was signed. This agreement will be subjected to the rules regulated within article 8.4 of Labour Workers' Statute that regulate information rights of the employee representative body.
- *Equal rights compared to traditional workers*: the regulation recognises to distance workers the same rights that apply to traditional workers except in those rights which are '*inherent to the work activity carried out at the employers' facilities*' (Article 13.3). However, it only specifies the rights to 'equal pay', 'equal training' and 'equal promotion' in a less developed form than the EU framework agreement (Lousada and Ron, 2015).
- *Health and safety*: in this field, the regulation only states that distance workers are entitled to an appropriate health and safety protection, according to Law 31/1995 on Labour Risk Prevention.
- *Representation rights*: distance workers are entitled to the same representation rights as traditional workers. To this aim, distance workers have to be registered within a specific workplace of the company.

Table 2. Main concepts / categories used at national level in regulation

Terms	ICT use	Frequency	Place of work	Employment status
Telework (EU 2002 Framework Agreement)	Use of ICT	On a regular basis	Outside the employers' premises	In the context of an employment contract / employment relationship
Austria				

⁹ Until 2012 'homework' (*trabajo a domicilio*) was the only term included in the Spanish legislation to refer to work arrangements carried out outside the employers' premises, though it did not cover those involving the use of ICT. Policy debate on the replacement of 'homework' started in 2010 when the Popular Party, at that time in the opposition, presented in the Spanish Parliament a Law Proposition with the aim to modify article 13 of Spanish Workers' Rights Statute that was rejected in March 2011.

Telework in collective agreements	Use of ICT	On a regular basis	Any place outside the employers' premises	In the context of an employment relationship
Denmark				
Distance work (public sector CA ¹⁰)	Use of ICT	On a regular basis within the agreed working schedule	Outside the employer's premises (home).	In the framework of an employment contract / relationship
Telework (private sector CA ¹¹)	Use of ICT	On a regular basis	Any place outside the employers' premises	In the framework of an employment contract / relationship
Estonia				
Telework Employment Contracts Act § 6.4 (2009)	Not specified		Outside the employer's premises including employee's home	In the framework of an employment contract relationship
Telework Cross-sectoral national agreement (2017)	Not specified	Not specified	Outside the employer's premises including employee's home	In the framework of an employment contract relationship
Portugal				
Telework (Labour Code)	Use of ICT	Not specified	Outside the employers' premises	In the framework of an employment relationship
Spain				
Home-based work (<i>trabajo a domicilio</i>) (until 2012)	Not specified	Working at least one other location than employers' premises at least 20% of regular working time	Home and other workplace away from the employers' premises freely chosen by the employee	Regulated as a contractual arrangement for salaried employees.
Distance work (2012 onwards)	Not specified	Working at least one other location than employers' premises at least 20% of regular working time	Home and other places freely chosen by the employee	Not a contract but a 'written agreement' in the context of an employment relationship
Telework (collective bargaining)	Use of ICT	Only specified in some agreements or trade unions' proposals	Any place outside employers' premises	Individual agreement between MGMT and the employee framed in the terms of collective agreement.

¹⁰ Collective agreement between the Ministry of Finance and the Danish Central Federation of State Employees (CFU)

¹¹ Industrial Agreement Protocol, 2005.

5. Virtual work and collective bargaining in the three sectors considered

5.1 Industrial relations context: trends in bargaining coverage, structure and articulation in the three sectors considered

- *Financial service activities (NACE 64) (except insurance and pension funding):*

The system of collective bargaining in the finance sector in **Austria** and **Spain** present similarities with regard to the degree of centralisation. In both countries separate national sectoral collective agreements exist for different types of financial institutions (commercial banking, savings banks, mortgage banks, cooperative banks, etc). In both countries this sectoral differentiation is mirrored by different employer organisations that negotiate on behalf of their respective constituency. The prevalence of national sectoral level of collective bargaining ensures high coverage rates in the sector.

Collective bargaining in the **Austrian** banking sector differs from the standard pattern in that collective agreements are signed formally by the voluntary associations. In almost all other sectors, collective bargaining on behalf of the employers is exclusively conducted by the corresponding sectoral subunit of the Federal Economic Chamber (WKO), of which membership is mandatory. The five sectoral collective agreements that exist in the financial sector cover topics such as holiday pay, flexibilization of working time, shortening of working hours or pension funds. The provisions of sectoral collective agreements are in larger financial enterprises often improved at company level through – also statutory - company agreements.

In **Spain**, the provisions of sectoral agreements are improved at firm level through specific agreements (non-statutory) concluded in most of the largest financial institutions. Spanish employer associations in the financial sector have been traditionally reluctant to negotiate a wide range of issues concerning pay systems (e.g. performance-related pay) and work organisation at sectoral level, since these issues are considered strategic to firms' competitiveness and therefore need to be preserved from collective bargaining. Indeed, most of the innovations in human resource management, such as the adoption of flexible working schemes, tend to be unilaterally implemented by management without any consultation or bargaining with union representatives.

In **Denmark** multiemployer bargaining is prevalent in the financial sector, resulting in high coverage rates. Social partners regulate all issues related to collective bargaining and mutual recognition determines the representativeness of the bargaining parties. In the finance sector, trade union density is around 85% and almost all the financial institutions are members of the employers' association signing the collective agreement.

Collective bargaining in the **Estonian** financial sector is non-existent either at sectoral and company level. This is in spite of the presence of a recently established sectoral union in 2013 (*Eesti Finantssektori Töötajate Liit*, EFL). The foundation of a new trade union in the financial services was a surprising event, considering the declining trend of union membership in the country. On the other hand, there are no employers' associations in the sector who would identify themselves as social partner that may conclude collective agreements.

In **Portugal**, the financial sector is highly decentralised. In fact, the employer federation has been traditionally reluctant to negotiate at sectoral level, as collective bargaining is considered strategic to the competitiveness of firms. Two federations of unions and three trade unions are involved in collective bargaining, mostly at company level. In 2016, the percentage of workers covered by collective bargaining in the sector was 89%, above the coverage for all sectors (GEP - Quadros do Pessoal 2016). Multi-employer agreements covered 73% of the workers and single-employer coverage was 15%. These coverages are indicative as the data available for the financial sector also includes the insurance sector.

- *Health care sector (homecare services)*

The collective regulation of employment relations in the homecare services sector differs depending on the role played by public and private operators in national healthcare systems. It has however noted a general predominance of national sectoral level of bargaining in the five countries considered, even in the most decentralised systems such as Estonia.

In **Austria**, whereas a majority of employees in the hospital sector and in nursing homes are public servants, homecare services are predominantly provided by non-profit organisations and thus an overwhelming majority of employees in the homecare sector are private sector employees. Sectoral agreement covering the whole health care and care sector, including work with the disabled, children and youth welfare and the provision of labour market policy services, reaches up to 90-100% of the total workforce, according to the social partner organisations in the sector.

In **Spain**, the conditions for entitlement to public homecare services followed the adoption of the 39/2006 Law on the Promotion of Personal Autonomy and Care for Dependent People (the so-called 'Dependency Act'), by which these services were recognised as a 'subjective right' and therefore became integrated into the Social Services networks under the jurisdiction of Regional Governments and, ultimately, local entities, which are responsible for the provision of these services given its proximity character. The role of private sector in the provision of homecare services through different formulas of Public-Private Partnerships had been on the rise due to the impact of retrenchment measures adopted by successive governments in the context of austerity policies. Social economy organisations and small companies that were traditionally active in the sector become displaced by competition from large companies attracted by new business opportunities (Eurofound, 2015).

National sectoral collective agreement on assistant services to dependent persons and for the development and promotion of personal autonomy aims at covering all the companies providing care services for dependent people in Spain. This level of bargaining merely acts as a framework for the collective bargaining taking place at lower levels (namely regional and local levels). Specific sectoral collective agreements on homecare services are also in force at regional level (Catalonia, Asturias). A recent development that may be undermining the coverage of the sectoral levels of bargaining in the private sector refers to the increasing presence of multi-services companies getting involved in the provision of homecare services. Since Law 3/2012 modified the 'favourability principle' by granting unconditional priority to company agreements over multiemployer bargaining, multi-services companies may apply their own company agreement.

Collective bargaining coverage in **Denmark** is close to 100% because it is a public sector and all the municipalities are members of the KL, the public sector organisation signing the national sectoral collective agreement. Trade union density in the sector is close to 60%.

Collective bargaining in the **Estonian** health care sector significantly differs from the most common bargaining structure of the rest of the economy, both for the presence of strong unions along with high coverage rates stemming from the prevalence of a sectoral level of bargaining. According to estimates, trade union density in the sector is estimated at 19%, far higher than national average. The sectoral collective agreement currently in force was concluded in 2015 and was subsequently extended to all employers' in the sector who provide health care services by the activity license issued by the Estonian Health Board and whose activities are financed by a financing agreement with the Estonian Health Insurance Fund or from the state budget. In addition to sectoral collective agreement, there are also several company agreements. Collective bargaining coverage in the sector is higher due to the sectoral collective agreement, but it is not possible to conclude the exact number due to lack of available data.

In **Portugal**, homecare services are predominantly provided by non-profit organisations. The sector has three employer federations and seven trade unions involved in collective bargaining. The National Confederation of Solidarity Institutions centralises most collective bargaining with

trade unions. In Lisbon, a regional charity also signed company agreements. In 2016, collective bargaining covered 77% of workers in the healthcare sector, below the 88% for the whole economy. Multi-employers agreements covered 74% of workers and single-employer agreements 3% (GEP - Quadros do Pessoal 2016). These coverages are indicative as the data available includes the whole healthcare sector.

- *Computer programming, consultancy and related activities (NACE 62).*

The structure of collective bargaining of the computer sector in the five countries considered, except for Estonia, is largely characterised by the prevalence of a national sectoral level of bargaining and high coverage rates. **In Austria**, centralised bargaining at national level ensures almost 100% coverage in the sector, with regard topics such as holiday pay, flexibilization of working time and also telework arrangements.

In Spain, the national sectoral collective agreement of market research and consultancy firms covers a large share of the companies and employees in the sector, usually known as the ‘ICT collective agreement’. One of the main issues dealt with in the last bargaining round of the collective agreement in 2017 was related to the replacement of the former system of job classification based on occupational categories by a new system of ‘professional groups’. Although both parties argued the need to adapt an outdated classification system to the new realities of the sector (the former agreement dated from 2008), it is also worth noting that 2012 labour market reform set the compulsory adoption of the new system for all the collective agreements in force, either at sectoral or company level.

In Denmark, sector coverage is fragmented. New companies within computer games or business intelligence have a relatively low rate of density and coverage, mainly because the employees (and the businesses) are very young. This is normally a factor in Danish industrial relations that equivalates ‘low coverage’. Computer programming probably has the highest within NACE 62, because it is the oldest and more stable. An estimation of 45% for organisation density and the same regarding total sectoral coverage is probably the best bit. There are around 49,000 employees in the sector. This, for Danish standards, relatively low coverage, is also partly because the professional’s associations of university graduates, such as for instance the Danish Society of Engineers, IDA, does not conclude collective agreements in the private sector due to an old tradition. In particular, IDA has many members working within NACE 62 as ICT engineers. Besides many programmers are covered by the collective agreement in finance.

Collective bargaining in the **Estonian** ICT sector is highly decentralised despite of the existence of sectoral unions and employers’ organisation, and so it is difficult to provide estimates on the coverage rates. Overall, the collective bargaining coverage in the ICT and telecom sector was around 12% in 2017 (Statistics Estonia), which is below the national average (18.6% Working Life Survey data). There is one employers’ organisation – Estonian Association of Information Technology and Telecommunications (*Infotehnoloogia ja Telekommunikatsiooni Liit*, IITL) who rather identifies itself as a business organisation and is not involved in collective bargaining.

In Portugal, the sector is highly decentralised with three employers’ federations and four federations of trade unions and five main unions. These actors settle many aspects of the sector, such as salary and progression in programming careers. In 2016, collective bargaining coverage was 65% in the Informatics and Programming sector, below the 88% for all sectors of the economy. The multi-employer agreements covered 62% of the workers and single-employer agreements covered 3% of the workforce (GEP – Quadros do Pessoal 2016). These coverages are indicative as the data available is restricted to the programming sector and many employees work in other sectors.

Table 3. Main social partners’ actors, structure and coverage of collective bargaining in the three sectors considered

Austria	Finance sector	ICT programming and	Homecare
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		consultancy	
Unions	Union of Salaried Employees, Graphical Workers and Journalists (GPA-djp)	Union of Salaried Employees, Graphical Workers and Journalists (GPA-djp)	Union of Salaried Employees, Graphical Workers and Journalists (GPA-djp) (white collar – private sector) VIDA trade union (blue collar) The Union of Public Services (GÖD) and the Union for Municipal Employees and the small Arts, Media, Sports and Liberal Professions (Younion) (public sector level).
Employers Association	Five employer groups that mirror the sector's differentiation by type of bank and ownership and two for each type of bank, one voluntary and one mandatory represent these five groups in social and business matters ¹²	'IT – Services' of the Federal Economic Chamber (WKO) is exclusively conducting collective bargaining on behalf of the employers.	Sozialwirtschaft Österreich' - Association of Employers for Health Care and Social Workers - (SWÖ)
CB structure / coverage	Different CA covering subsectors / 100%	National sectoral collective agreement in five subsectors 100%	National sectoral collective agreement SWO - GPA-djp / 90-100%
Denmark	Finance sector	ICT programming and consultancy	Homecare
Unions	Financial Services Union (Finansforbundet) Member of Confederation of Professionals (FTF) Union density: 85%	IT Professionals in Denmark (PROSA) - Member of Confederations of Professionals (FTF) Samdata - Member of Danish Confederation of Trade Unions (LO)	Trade and Labour (FOA) Member of Danish Confederation of Trade Unions (LO)

¹² The respective employer associations are the VÖBB (Austrian Bankers' Association) as the voluntary association and the FVB (Fachverband der Banken und Bankiers) as the mandatory WKO subunit for commercial banks; the ÖSV (Austrian Savings Banks Association; voluntary) and the FVS (Fachverband der Sparkassen; WKO subunit) for savings banks; the VÖLHB (Association of Austrian State Mortgage Banks; voluntary) and FVLHB (Fachverband der Landes-Hypothekenbanken; WKO subunit) for partially state-owned mortgage banks; the ÖRV (Austrian 'Raiffeisen' Association; voluntary) and FVRB (Fachverband der Raiffeisenbanken; WKO subunit) for a special type of cooperative banks; and the ÖGV (Austrian Association of Cooperatives; voluntary) and FVVB (Fachverband der Volksbanken; WKO subunit) for another type of cooperative banks.

Employers' Association	Danish Employers' Association for the Financial Sector (FA) – Also considered a confederation in the sector	Confederation of Danish Industries (DI) - Danish Chamber of Commerce (Dansk Erhverv) – Both member of Confederation of Danish Employers (DA) Danish Producers' Association - (Producentforeningen) - Not member of a confederation	Local Government Denmark (Kommunernes Landsforening, KL) - Public sector organisation
CB structure / coverage	National sectoral collective agreement / 100%	Multiemployer and company agreements / 45%	National sectoral collective agreement / 100%
Estonia	Finance sector	ICT programming and consultancy	Homecare
Unions	Union of Estonian Financial Sector Employees (Eesti Finantssektori Töötajate Liit, EFL)	Estonian Communication and Service Workers' Trade Union (Eesti Side- ja Teenindustöötajate Ametiühingute Liit, ESTAL)	Estonian Medical Association (EAL), Union of Estonian Healthcare Professionals (ETK), Estonian Nurses Union (EÕL), Union of Estonian Emergency Medical Services (Eesti Kiirabi Liit),
Employers' Association	No employers' association	Estonian Association of Information Technology and Telecommunications (Infotehnoloogia ja Telekomunikatsiooni Liit, ITL)	Estonian Hospitals Association (Haiglate Liit) and Estonian Association of General Practitioners (Eesti Perearstide Selts)
CB structure / coverage	No collective bargaining	Company level bargaining / 12%	Two-tier collective bargaining system (sectoral/company)
Portugal	Finance sector	ICT programming and consultancy	Homecare
Unions	FEBASE - Federação do Sector Financeiro FSIB - Federação dos Sindicatos Independentes da Banca SNQTB - Sindicato Nacional dos Quadros e Técnicos Bancários SBSI - Sindicato dos Bancários do Sul e Ilhas SBN - Sindicato dos Bancários do Norte	FE - Federação dos Engenheiros FETESE - Federação dos Sindicatos da Indústria e Serviços FEPCES - Federação Portuguesa dos Sindicatos do Comércio, Escritórios e Serviços FECTRANS - Federação dos Sindicatos de Transportes e Comunicações SINDEL - Sindicato Nacional da Indústria e da Energia SINDETELCO - Sindicato Democrático dos Trabalhadores das Comunicações e dos Media	FEPCES - Federação Portuguesa dos Sindicatos do Comércio, Escritórios e Serviços FNSTFPS - Federação Nacional dos Sindicatos dos Trabalhadores em Funções Públicas e Sociais FENPROF - Federação Nacional dos Professores SINTAP - Sindicato dos Trabalhadores da Administração Pública e de Entidade com fins públicos SINDITE - Sindicato dos Técnicos Superiores de

		SITese - Sindicato dos Trabalhadores e Técnicos de Serviços, Comércio, Restauração e Turismo SNEET - Sindicato Nacional dos Engenheiros, Engenheiros Técnicos e Arquitetos SERS - Sindicato dos Engenheiros	Diagnóstico e Terapêutica SEP - Sindicato dos Enfermeiros Portugueses SIM - Sindicato Independente dos Médicos
Employers' Ass.	APB - Associação Portuguesa de Bancos	ANEME - Associação Nacional das Empresas Metalúrgicas e Eletromecânica AGEFE - Associação Empresarial dos Sectores Eléctrico, Electrodoméstico, Fotográfico e Electrónico ANIMEE - Associação Nacional dos Industriais de Material Eléctrico e Electrónico	CNIS- Confederação Nacional das Instituições de Solidariedade FNS - Federação Nacional dos Prestadores de Cuidados de Saúde APHP - Associação Portuguesa de Hospitalização Privada
CB structure / coverage	Company level / 89%	Sectoral, multiemployer and company agreements / 65%	Sectoral, multiemployer and company agreements / 77%
Spain	Finance sector	ICT programming and consultancy	Homecare
Unions	Services Federation - CCOO Services Federation, Mobility and Consumption (FESMC-UGT)	Services Federation - CC.OO Services Federation, Mobility and Consumption (FESMC-UGT)	Public Services Federation of the UGT and CC.OO.
Employers' Ass.	Spanish Banking Association (AEB) Spanish Confederation of Saving Banks (CECA)	Spanish Association of Consulting Companies (AEC) National Association of Market Research and Public Opinion Companies (ANEIMO)	Business Federation of the Dependency Sector (FED) Federation of the residential and solidarity sectors (LARES) Business association of Dependency Services (AESTE)
CB structure / coverage	National sectoral collective agreement in commercial and saving banks subsectors / 100% coverage	Two tier system: National sectoral and company level	National sectoral, regional and company level of bargaining

5.2 Social partners and collective bargaining approaches to virtual work in the three sectors considered

5.2.1 EU level Sectoral Social Dialogue Initiatives

Social dialogue is crucial for securing that both employers and workers benefit from increased flexibility of workplace and working time linked to the development of virtual work arrangements. Since the adoption of the Telework Framework Agreement, European Social partners have become increasingly aware of advantages and disadvantages entailed by the progress of digitalisation on working practices. This has resulted in the conclusion of new joint texts by European Social partners at sectoral level (VVAA, 2018).

Among the sectors concerned in the research, **European social partners in the Banking sector adopted a joint declaration on telework in November 2017**. According to the text, telework ‘is a way of working using information and communication technologies that at least in part are performed from home or in satellite offices or any other fixed location on a continuous basis’. ‘Telework can also be performed as an employment contract or as an autonomous para-employment contract’¹³. Parting from this definition of the term, the joint declaration considers different work organisation and employment aspects of telework to be regulated, such as its voluntariness and reversibility for both the employee and the employer, the guarantee of equal treatment with regard to rights and obligations granted by applicable legislation and collective agreements between teleworkers and their office-based colleagues. The text also acknowledges the specific health and safety risks that teleworkers face compared to employees from the regular office and it provides for training initiatives tailored to them, such as the training of teleworkers on how to deal with the lack of social support and professional isolation.

UNI Europa and ICTS also negotiated and concluded a joint declaration on telework with the European Telecommunications Operators’ Association (ETNO) for the ICT sector (signed in February 2016)¹⁴. The text builds on the EU framework agreement on Telework and applies to ‘in-house employees who regularly work outside company premises on the basis of a mutual agreement’. On the other hand, the term ‘mobile work’ is used alternatively in the text. The European social partners invite their national affiliates to consider concluding a specific complementary collective agreement addressing specific issues related to working conditions: frequency of telework, health and safety risks, data protection, the right for the employer to get access to teleworkers’ place of work, also the responsibility for providing the necessary equipment for performing mobile work and access to training and career development opportunities.

Table 4. European Sectoral agreements on telework for banking and ICT sectors

	Joint Declaration on Telework in the Banking Sector	Telecom sector
Definition	TW is as form of organising work where tasks are performed with the support and the use of secure ICT devices outside a locally fixed employer environment Not applicable to workers performing	The joint declaration covers ‘ in-house employees ’ who regularly work outside company premises on the basis of a mutual agreement.

¹³ Joint Declaration on Telework in the European Banking Sector, <https://www.ebf.eu/wp-content/uploads/2017/11/Joint-Declaration-Telework-in-the-European-Banking-Sector-Final-version-signed.pdf>

¹⁴ Joint Declaration on Telework by the European social partners in the telecom sector, https://etno.eu/datas/ETNO%20Documents/Joint_Declaration_telework_UNIeuropa_ETNO.pdf

	'smart working' even on a regular basis	
Implementation	All issues mentioned to be developed in social dialogue at all levels, including collective bargaining.	A specific complementary collective agreement and/or individual-agreements addressing working conditions
Working conditions addressed	<p>Voluntary and reversible for both parties.</p> <p>Health & safety, data protection and cyber security, privacy, equipment use.</p> <p>Professional development and specific training on: (a) how to deal with the lack of social contact, (b) cybersecurity issues, (c) to anyone in the organisation with regard to telework</p> <p>Employer and workers' representatives may get access to telework place to verify health and safety and data protection provisions</p> <p>Employer responsible for providing and maintaining the necessary equipment</p>	<p>Voluntariness: the procedure for granting or refusing TW should be transparent.</p> <p>Frequency and availability (right to disconnect),</p> <p>Employer is responsible for health & safety issues mainly through information, providing means and instructions to teleworker.</p> <p>Employer responsible for measures on data protection.</p> <p>It is the responsibility of the employee to comply with health and data protection measures.</p> <p>Right to access the TW workplace in order to verify that health and data protection provisions are applied</p>

5.3.2 Sector-related approaches at national level

Social partners' approaches to virtual work in each of the sectors considered are assessed on the basis of: 1) the main level of bargaining where the regulation of these forms of employment is undertaken and; 2) its focus, that is, the specific content of the regulation on working conditions related to the practice of telework.

Company agreement appears as a key bargaining level for implementing or developing regulation of virtual work arrangements, bearing in mind that, generally, sectoral agreements only regulate general conditions. Even in those cases, such as in Austria, where the regulation set at sectoral collective agreement is more comprehensive than the 2002 EU framework agreement, the most detailed provisions on the issue are regulated at company level. On the other hand, in Spain and Portugal, the scarce references found in sectoral agreements are in most cases limited to reproducing the provisions set in their respective Labour Laws and/or the EU framework agreement. The Estonian case deserves particular attention. In this country, collective bargaining is highly decentralised and there are no sector-related collective agreements in the financial activities and computer programming sectors. Company collective agreements are also scarce and, accordingly, virtual work is mainly implemented through individual agreements and informal practices.

- *Financial service activities (except insurance and pension funding) (NACE 64):*

Sectoral bargaining is the most prevalent form of collective bargaining in the financial services in Austria, Denmark and Spain. However, the regulation of Virtual Work in this level of bargaining is neither common nor extensive in the three countries. In the **Austrian national sectoral collective agreement**, the adoption of telework arrangements at company level is mentioned. Article 25a states that the following list of contents needs to be addressed in company agreements: requirements for employment at external workplaces, allocation of

working time between work at the employer's premises and the external workplace, provision of work equipment or reimbursement of expenses, liability for special risks arising from the special features of an external workplace and conditions of termination. However, there is no empirical information about actual implementation at company level.

In the **Spanish** financial services industry, the most extensive regulation of the issues of telework and distance work is found at company level, though not always through collective bargaining but other instruments. In this regard, three different approaches have been identified related to the regulation of telework arrangements in Spanish financial services. A first approach to the regulation of telework is through the provisions of company collective agreements. The Volkswagen Finance company agreement for 2013-2016, explicitly set the goal for the implementation of 'distance work' as a means for easing the conciliation of working, personal and family life of the staff by taking advantage of the advancement of new technologies (art. 42). For this purpose, the agreement foresees the constitution of a joint committee with workers representatives and company and human resource managers that will analyse the conditions for implementing this work arrangement in 2015. The company agreement also establishes that at least two employees will benefit from distance work on a regular or partial basis according to the schedule agreed at the committee. A second approach to the implementation of virtual work arrangements at company level is pursued in the conclusion of a specific (non-statutory) company agreement on the issue¹⁵. The agreement on telework in the BBVA, one of the leading Spanish financial institutions, was concluded in 2011 at the request of workers' representatives. The agreement states that telework arrangements shall be formalised by individual agreement and not exceed the maximum threshold of 90% of the employee working schedule. The agreement also sets the employers' liabilities to ensure the health and safety standards of teleworkers as well as the responsibility for providing the necessary technical means for telework (software, hardware, chair and tables). The constitution of a joint commission for the monitoring of the agreement is foreseen. A third approach to the implementation of Virtual Work arrangements and other flexible working practices at company level is through management unilateral initiative in the framework of Corporate Social Responsibility programmes and/or Human Resource Management Strategies for attracting, recruiting and retaining skilled staff. This is the case of the adoption of *Flexi-working* schemes in Banco Santander. A hallmark of this approach is a set of flexible work arrangements introduced to give workers greater flexibility in hours or work place with a view to support work-life balance and improve performance. This kind of arrangements were introduced in the Corporate Centre through HRM practices without former consultation and bargaining with workers' representatives. One of the reported consequences of the lack of collective regulation is that these arrangements may be unilaterally reversed without negotiation at the discretion of managers.

In **Denmark**, the Financial Services Union and their employer counterpart, Danish Employers' Association for the Financial Sector (Finanssektorens Arbejdsgiverforening, FA) have signed a framework agreement on telework which is included as a standard protocol in collective agreements. The agreement explicitly excludes mobile work, that is, the tasks of sales persons and work performed at shifting locations, as well as work carried out at a remote posting or during business travel. The framework agreement specifies that teleworking may only be part of the total working time, so that workers' relations to the company are maintained, both workwise and socially. In addition, the employee may request a maximum teleworking of 50 per cent of working time, calculated over a period of 13 weeks. It is also underlined that the teleworker must have access to a workplace on the company premises (ILO, 2016).

¹⁵ Here it should be pointed out the difference existing in the Spanish Labour Law between statutory company collective agreements and the bargaining of specific company agreements between workers' representatives on specific issues that are not dealt with in collective agreement, and thus of a subsidiary nature with regard sectoral bargaining. These non-statutory company agreements are not recorded in official statistics of collective bargaining.

In **Portugal**, no conventions exist directly regulating virtual work in the financial sector. It is possible that companies establish HR arrangements directly with employees to attract and retain skilled staff.

In **Estonia**, there is no empirical information about how virtual work is regulated at company level. As noted above, in this sector collective bargaining is non-existent at sectoral and company level.

- *Health care sector (homecare services)*

Virtual work arrangements in homecare services are only regulated through collective bargaining in **Portugal**. In this country, the healthcare sector has two company agreements in force regulating telework. They were signed in 2017¹⁶ by a charity organisation providing the services and two trade unions. The content of the company agreement includes mainly the repetition of the telework clauses existent in the labour code. The agreement emphasised the improvement of working conditions in terms of the rights and requirements of workers to telework. The workers' rights regulated in the agreement include: time of contract (maximum 5 years); the right to return at least for a week every 6 months to reinforce workers integration in the structure and culture of the charity; the right to finish telework within the initial 30 days with the right to return to the right to return to the previous post or equivalent after telework; and the preference to workers with disability, chronic disease and parents with children under 12 years old or family.

In the **Austrian** sector of 'mobile health care services' only a regulation regarding split duties (that is a first shift in the morning and a second one in the evening), is found (Article 4 working time). It stipulates that daily working time can be split by means of a company agreement. If the daily working time is split, the travel times (place of work – home) between the shifts are working time. In addition, the travel costs have to be reimbursed

- *Computer programming, consultancy and related activities (NACE 62).*

Sectoral bargaining in the ICT sector in **Austria** provides one of the most comprehensive regulations regarding telework. The national sectoral collective agreement for computer programming, consultancy and related activities, in its article 9, deals with the framework conditions and the reimbursement expenses for employee's agreed telework outside the employers' premises. The text of the agreement states that the adoption of telework outside the employers' premises is voluntary and based on a written agreement between the employer and the employee (9.I.3.a). This agreement must abide with the sectoral agreement clauses as well with the company agreement if any. The employee legal status will not be modified by the agreement (9.I.3.b). Furthermore, the existing company regulations are also applied to teleworkers working outside the employers' premises. Regarding working time, the agreement specifies that the distribution of working hours between the company and the teleworkers should be set in written agreement (9.II.2) and that all the working hours exceeding the prevailing normal working hours must be previously imposed by the employer to be recognised as such, independent of the workplace (9.II.3). Concerning the operational costs stemming from the adoption of this work arrangement, the agreement states that all the necessary computing and communicational equipment for the telework place outside the employers' premises shall be borne by the employer. Finally, the agreement sets the right of the works council to be informed about all employed teleworkers working outside the employers' premises. The works council has the right to use the electronic communication equipment. The works council shall be reimbursed for the incurring costs in connection with the extraordinary support of teleworkers.

¹⁶ AE SCML/SFP e AE SCML/SDPGL, both in BTE 18/2017 (cl.9.^a).

The national sectoral collective agreement in **Spain** does not explicitly refer to the issue of telework or any other virtual work arrangement. An example of telework regulation at sectoral level, though much less comprehensive, is provided by Sectoral Agreement for Offices in Catalonia, which may cover some ICT consultancy companies (of a regional scope). The text explicitly refers to telework as a work arrangement concluded according to the provisions of the EU framework agreement. The agreement also sets the employers' obligation to bear the costs involved when telework is carried out on regular basis as well their responsibility for securing the health and safety standards for teleworkers.

The adoption of these virtual work arrangements is far more extended at company level and specially among those with a more intensive use of new ICT. However, there are no published cases of company agreements regulating the topic in the countries considered. Research from 2007 conducted by the Spanish Industrial Observatory of ICT industries on the extension of telework in the sector already showed that the adoption of this work arrangement in the large companies of the sector was seldom regulated through collective bargaining. Although most of the companies in the sector provide for the possibility of teleworking, in most cases it is arranged through individual bargaining and according to internal HRM procedures. In all cases telework arrangements are established on a voluntary basis and its reversibility with notice periods. Equal working conditions are also guaranteed for teleworkers with regard the rest of workers in the company. Generally, the equipment is partly provided by the companies whereas the reimbursement of expenses is only provided in some cases.

A singular case of regulation at company level is the collective agreement of Hewlett Packard customer delivery services for 2016-2019. The text highlights the exceptional, voluntary and time-bond character of telework arrangements, whose schedule and other performance conditions shall be agreed between the employees concerned and company representatives.

Evidence gathered points out that more innovative Virtual Work arrangements in the sector are being implemented at company level without any form of bargaining or consultation with workers' representatives. The case of Indra, one of the largest Spanish companies and leading multinational in the ICT sector, has been implementing a far-reaching telework programme since 2002 (TL-Trabajo) as part of Virtual Work arrangements at place in the company. The practice of telework is supplemented by other organisational innovations, such as 'flexible offices', where the employees no longer have a fixed site but are allowed to work anywhere inside the corporate building according to their needs.

In **Denmark**, collective agreements in the sector of computer programming activities, consultancy and related activities (NACE 62) do not include provisions on virtual work. Moreover, there are no data or reported cases of company agreements on virtual work outside the framework of sectoral collective agreement. In Denmark, genuine company agreements that fall outside the scope of social partner collective bargaining do not appear anywhere in statistics or other official/unofficial sources. Virtual work in this sector is therefore regulated and implemented in the context of individual negotiations or HRM practices.

In **Portugal**, there are three conventions (agreements) in force with telework clauses for workers involved in computer programming activities, consultancy and related activities. The conventions were signed by organisations originated from the metal, electric and insurance sectors and also covered the sector of NACE 62. There was one collective agreement in 2017¹⁷ that mentions telework between the metal federation and several trade unions and also regulates salaries of informatics analysts, informatics operators, preparative of informatics data and information technicians. The convention mainly repeats the telework clauses existent in the labour code and stipulates that teleworkers are exempted from having defined working hours through a written agreement. Second, there were two collective agreements in 2016 and 2017¹⁸ that mentions telework with an employers' association and trade unions of the electric

¹⁷ Contrato Coletivo FENAME/SITESE e outros, in BTE 36/2017 (cl.29.^a- C).

¹⁸ Contrato Coletivo 2016 (ANIMEE/FETESE – BTE 19/2016 (cl.27-34) and Contrato Coletivo 2017 AGEFE/FEPCES - BTE 5/2017 (cl. 15.^a - B).

sector that stipulates salaries of principal analysts of informatics, professional analysts of informatics and professional operators of informatics. Third and lastly, there was a company agreement of the insurance sector in 2017¹⁹ that includes clauses regulating telework and salaries of informatics directors and of informatics coordinators. It mainly repeats the telework clauses existent in the labour code and emphasises the improvement of working conditions in terms of the rights and requirements of workers to telework. It stipulates that the contracted activity may be carried out outside the company through the use of information and communication technologies, by means of a written contract for the subordinated teleworking service, with all the rights and guarantees guaranteed by law. In the case of a worker who was previously linked to the employer, the agreement stipulates that the initial duration for teleworking is a maximum of 3 years, considering the contract is automatically and successively renewed for periods of 1 year, if not denounced by any of the parties with at least 3 months' notice in advance of the initial term or any renewal. Terminating the teleworking contract referred to before, and maintaining the contractual link to the employer, the agreement stipulates that the employee will resume the functions previously exercised, or other equivalent, unless otherwise agreed in writing.

Finally, in **Estonia** Virtual Work is only addressed in the context of individual negotiations or HRM practices.

Conclusions

According to desk research, a common definition of virtual work is lacking. Different definitions are used, mostly based on the number of work locations and mobility patterns, and only sometimes referring explicitly to the use of ICT and mobile devices. Telework is still a prevalent term in all the countries for referring to work arrangements outside employers' premises enabled by new ICT. However, different ways to operationalise this concept and the breaks in the statistical series hinders comparability of the results. A common approach for assessing the actual extent of Virtual Work in the five countries is only feasible through European sources, namely the European Working Conditions Survey –EWCS- (ICT based mobile work) and the European Labour Force Survey –ELFS- (home based telework).

Implications of digitalisation on the labour market have received increasing attention from different disciplines in recent times. However, research on working conditions is rather imbalanced. Whereas telework has been studied extensively for its capacity to contribute to different forms of working time and locational flexibility and its impact on work-life balance, the impact of the current wave of digitalisation on working conditions has not been thoroughly studied in the five countries concerned. Rather, the focus of research was on employment effects and changes in skills demand.

This lack of interest contrasts with the current extension of virtual work arrangements, and specifically home-based telework in the last years according to available figures from EWCS and ELFS. At sectoral level, few specific studies on the impact of virtual work on working conditions have been conducted, mostly focusing on the ICT and the financial sector. The adoption of digital tools and mobile devices in the homecare sector has also received little research attention. This may be due to the very recent adoption of the technology and its very limited impact on the core tasks of the job, but also because of the traditional invisibility of care work.

At European level, main regulation on virtual work is focused on telework. The regulation of telework was early accomplished in 2002 through the conclusion of a Framework Agreement by European Social Partners. However, the role played by social dialogue and collective bargaining in the regulation of the working conditions of virtual workers in the three sectors differ widely across the five countries. Firstly, though predictable, the most extensive regulation of virtual work arrangements is found in financial services and the ICT sectors with a clear focus on

¹⁹ Acordo de Empresa Ageas Portugal /SINAPSA, in BTE 37/2017 (cl. 16.^a).

telework. However, only in Austria and Denmark national sectoral collective agreements include provisions for the implementation of telework arrangements at company level. In both countries there is a long tradition of bargaining on these issues, which in Denmark dates back to the 1990's, before the conclusion of the EU Agreement. In Austria, where social partners have largely implemented the provisions of the EU Agreement in most of the sectoral agreements, it is particularly the ICT collective agreement with the most comprehensive regulation of telework arrangements at company level.

In Portugal and Spain, the picture is rather more complex. Both countries have specific legislation addressing either telework or distance work arrangements. Portugal was one of the first countries introducing telework into national legislation in 2003. In Spain, social partners played a major role in the regulation of telework until 2012, when the new category of distance work was unilaterally introduced by Government in the passing of the Law 3/2012. In these two countries sectoral collective bargaining on the issue of telework is mostly limited to replicating the provisions set in the Labour Law. In Spain, most of the companies in the financial services and the ICT sector provide for the possibility of teleworking, though it is seldom regulated through collective bargaining, mainly through internal Human Resource Management procedures.

In Estonia, where social partners recently concluded a cross-sectoral agreement on telework in the private and public sectors (respectively in June 2017 and April 2018), it is difficult to assess its actual implementation at company level, since collective bargaining both in the financial and the ICT sectors is reported as non-existent.

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Annex

A1. National sources and methodological approaches to Virtual Work

Country / concept	Definition	Source	Incidence estimates
Austria / Telework (2002)	Work is performed in the home or at premises not related to the employer company with a personal computer (PC) for at least one working day – that is, eight hours – a week. Work products are submitted through data communication, telephone or fax.	Labour Force Survey, Statistics Austria (2002)	7.7% of total workforce
Austria. (2015)	'Main place of work': Work at different locations than employers' premises	AT Labour Force Survey – Ad-hoc module on work organisation and working time arrangements (2015)	Total 16.9% outside the employers' premises
Denmark	Workers that have been working at home 'minimum once the last four weeks'	StatBank Denmark	29.1% (2107)
Estonia (2015)	'Main place of work': Work at different locations than employers' premises most of the time.	Estonian Work Life Survey	24% outside employers' premises
Estonia / telework (2012)	Telework occurs when employees, who are expected to work normally from fixed locations, carry out all, or part of their work at home (or distant office etc.) and transfer the product of their work to the employer using information and communication technologies.	Estonian Labour Force Survey	
Portugal / Telework contracts	<i>'contrato para prestação subordinada de teletrabalho'</i> Data on this type of contract does not account for employees with regular contracts involved in Virtual Work practices or those in self-employment.	<i>Quadros de Pessoal</i>	0.03% of total contracts in 2016
Portugal / Telework	<i>Occasional and regular teleworkers</i>	INE – National Institute of Statistics	1.8% of the 29% of population using computer (2001)
Spain / companies	% of companies with employees who worked outside the company premises on a regular basis (at least half a week) and connected to the	INE - 'Survey about ICT and Electronic	27% of total companies (2013)

	company's ICT systems through external telematic networks.	Commerce use in Companies'	
Spain / Home-based telework	Work from home at least once in the last four weeks Employment contract or relationship it is recognised that part of the work is carried out from home.	Labour Force Survey (Micro data)	XX

Source: own elaboration