

March 2023

European Social Observatory deliverable

**The impact of
digitalisation on job
quality and social dialogue
in the public services: the
case of France**



**Nicolas Fleury, Antoine Rémond,
Alice Rustique**
Secafi-Groupe Alpha

www.ose.be

rue Paul Emile Janson 13 / 1050 Bruxelles / tel.: 32 (0)2 537 19 71 / fax: 32 (0)2 539 28 08 / e-mail: info@ose.be



**The impact of digitalisation on job quality and social dialogue in the public services:
the case of France**

DIGIQU@LPUB Deliverable D2.8

**Nicolas Fleury, Antoine Rémond, Alice Rustique
Secafi-Groupe Alpha**

With the financial support of the



Table of contents

EXECUTIVE SUMMARY	6
SECTION 1. INTRODUCTION	10
Section 1.1 Purpose of the research.....	10
Section 1.2 Digitalisation: state of play and national strategies	10
1.2.1 Latest DESI Index and overview of digitalisation in the economy.....	10
1.2.2 Digital national strategy	12
Section 1.3 Research on the impact of digitalisation on job quality at cross-sectoral level: state of the art .	13
1.3.1 Potential job substitution	13
1.3.2 Productivity and net effect of digitalisation on jobs	14
1.3.3 Work organisation	14
1.3.4 Working time	16
1.3.5 Health and Safety.....	16
1.3.6 Skills and learning	16
1.3.7 Reconciliation of work and personal life	17
1.3.8 Career prospects and employment security	17
1.3.9 Workers’ rights.....	18
SECTION 2. IMPACT OF DIGITALISATION ON JOB QUALITY	18
Section 2.1 Electricity production and distribution sector	18
2.1.1 Overview of the sector.....	18
2.1.2 History and patterns of digitalisation in the sector	20
2.1.3 Work organisation	24
2.1.4 Working time	31
2.1.5 Health and safety and outcomes for workers.....	32
2.1.6 Skills and learning	35
2.1.7 Reconciling work and personal life.....	37
2.1.8 Career prospects and employment security	38
2.1.9 Workers’ rights.....	39
2.1.10 Conclusions on the sector	39
Section 2.2 Public administration sector	42
2.2.1 Overview of the sector.....	42
2.2.2 History and patterns of digitalisation in the sector	43
2.2.3 Work organisation	45
2.2.4 Working time	48
2.2.5 Health and safety and outcomes for workers.....	50
2.2.6 Skills and learning	51
2.2.7 Reconciling work and personal life.....	53
2.2.8 Career prospects and employment security	54
2.2.9 Workers’ rights.....	55

2.2.10	Conclusions on the sector	58
Section 2.3	Hospital sector	59
2.3.1	Overview of the sector	59
2.3.2	History and patterns of digitalisation in the sector	60
2.3.3	Work organisation	63
2.3.4	Working time	68
2.3.5	Health and safety and outcomes for workers.....	69
2.3.6	Skills and learning	72
2.3.7	Reconciling work and personal life.....	74
2.3.8	Career prospects and employment security	75
2.3.9	Workers' rights.....	76
2.3.10	Conclusions on the sector	76
Section 2.4	Overall sectoral cross-cutting conclusions	78
Section 3.	DIGITALISATION AND SOCIAL DIALOGUE	80
Section 3.1	Introduction: contextualising the national system of industrial relations.....	80
3.1.1	Structure of social dialogue and collective bargaining in France.....	80
3.1.2	Quality of social dialogue	82
3.1.3	Some developments since the 2017 Ordonnances Travail	83
3.1.4	Representativeness of trade union confederations	84
3.1.5	The scope of collective bargaining on digitalisation is limited to teleworking.....	84
Section 3.2	Trade Unions' position on digitalisation at national level	85
3.2.1	A brief review of collective works drafted with the participation of trade unions	85
3.2.2	Specific views and positions of the main French trade union confederations.....	86
Section 3.3	Electricity production and distribution sector	90
3.3.1	Collective bargaining in the sector	90
3.3.2	Role and importance given to digitalisation in the national industry-wide agreements.....	91
3.3.3	Trade union approaches and priorities for the collective bargaining agenda on digitalisation.....	93
3.3.4	Conclusions on the sector	94
Section 3.4	Public administration sector	95
3.4.1	Collective bargaining in the sector	95
3.4.2	Role and importance given to digitalisation in the national industry-wide agreements.....	96
3.4.3	Trade union approaches and priorities for the collective bargaining agenda on digitalisation.....	96
3.4.4	Conclusions on the sector	97
Section 3.5	Hospital sector	98
3.5.1	Collective bargaining in the sector	98
3.5.2	Role and importance given to digitalisation in the national industry-wide agreements.....	98
3.5.3	Trade union approaches and priorities for the collective bargaining agenda on digitalisation.....	99
3.5.4	Conclusions on the sector	100
Section 3.6	Overall sectoral cross-cutting conclusions	100

Section 4. RECOMMENDATIONS TO NATIONAL AND EU STAKEHOLDERS.....	102
Section 4.1 Recommendations to national stakeholders	102
Section 4.2 Recommendations to European stakeholders	103
Section 5. REFERENCES	105
Annex 1. List of interviews.....	109
Annex 2. List of focus groups.....	110

EXECUTIVE SUMMARY

Since the 2010s, all three sectors have experienced considerable growth in digitalisation, which takes a large number of forms in all of them. In particular, in the last few years, working time spent on tablets, computers, or smartphone has boomed.

In terms of work content, developments have been very diverse depending on the job, but some important changes have occurred since the introduction of new digital processes/software/tools. New tasks (for instance related to software applications) have been added to existing jobs, which regularly include new administrative and data entry tasks (reporting for example), increasing the workload. In the electricity and hospital sectors, digital planning of the day and digitalisation of files enables optimisation and segmentation of tasks; each task is associated with a specific set time and contingencies are not included. Work intensification is observed for many jobs/professional positions in the three sectors.

In all sectors, social and hierarchical ties have been loosened in communication channels that go through e-demands, e-mails or smartphone, thus detrimental to general relationships between employees. Direct and physical interactions have very significantly declined, with a serious impact on work collectives.

In all sectors, the rather high cost of digitalisation is notably due to the rise of support expenditures externalised to private IT consultancy firms, matching with the multiplication of software applications. Workers emphasize serious inefficiencies of the software used, notably due to recurrent problems of interconnectivity, issues with development and to a lack of employee participation in their implementation.

Digitalisation often entails physical and/or mental problems in the sectors. While teleworking can have a positive effect on the employees' working conditions, the digital devices/processes/tools implemented in the sectors regularly have negative effects, due to work intensification (increased workload and pace of work), mental workload, workers' isolation or stress.

Career prospects and employment security are challenged by digitalisation. In the public administration and electricity sectors, this is because digital tools and devices often seem to be used with a view to productivity gain and to reduce the workforce (substitution effect). In the public hospital sector, digitalisation is one factor in 'loss of attachment' to the civil service, and partly explains the difficulties with career development, creating forms of professional insecurity.

The three sectors share some common history as well as differences in the most recent period, explaining variations in collective bargaining activity. Until the mid-2000s, the electricity industry in France belonged to the public sector, and as such was under the specific collective bargaining

framework of the public services, which was at the time very limited in scope. Most recently, electricity has become part of the private sector and the scope of collective bargaining in the sector as such has been enlarged: the trade unions make many demands, and there is intense negotiation on many topics (pensions, salaries, workforce and skills planning, etc.). In the public administration and in the (public) hospital sectors, the scope of collective bargaining was very limited until quite recently. Only in 2019/2021 did some important changes to the social dialogue bodies take place: the scope of bargaining has been enlarged, and agreements in the public service have become binding.

For now, digitalisation is a relatively minor topic for collective bargaining. In the electricity sector, the two main companies have concluded very few agreements related to digitalisation. The only exceptions are on the right to disconnect, teleworking, and monitoring the effect of teleworking and digitalisation. Neither is digitalisation a recurrent topic of social dialogue in (public) hospitals and the public administration. The only national (framework) agreement concluded on the topic is the 2021 agreement on teleworking.

The effects of digitalisation on the quality of work are numerous, reflected by the demands of trade unions on these issues: this calls for an intensification of social dialogue and collective bargaining on the topic of digitalisation in the sectors.

The research identified a number of recommendations as to how to channel the impacts of digitalisation on job quality and on social dialogue and ensure good, related practices. These recommendations may be implemented at the national or the European level. We develop these recommendations further in the related section.

At the national level, a first recommendation would be to ensure that the implementation of new digital tools or approaches is jointly led by workers. An impact assessment on the consequences for employment must also be conducted before the implementation of new tools. There must be a systematic review of implementation (communicated to the workers) by a monitoring committee. The anticipated impacts must be taken into account in skills and career paths.

In terms of IT devices, various suggestions have been reported for the public administration sector, that also seem relevant to the hospital sector: (i) creation of a secured public IT hub at national or sectoral level to benefit workers (implementation of common digital tools, in particular software, national public 'Cloud', remote access, videoconference); (ii) greater harmonisation of digital software between administrations, or within a given administration; (iii) a reflection on data and artificial intelligence (AI), which is becoming more and more central (issues of data security, ownership, respect of the users' private life). These questions refer broadly to fundamental rights and democracy.

It is also important to promote digital acculturation at different levels:

- Support and training of workers and managers to render work teams more effective in a digitalised context.
- Acculturation of political leaders, senior administrative officials (and employers in general) and particularly union representatives to the challenges of digitalisation. They should be given customized training, to remedy their lack of expertise on digitalisation and 'lagged' appropriation.

Possibilities for direct contact between staff and users of public services (or re-opening of certain local administrations) should be addressed, for better inclusion of all sectors of the public.

Following the recommendations of a recent EPSU report (¹), the outsourcing/use of (private) consulting firms in ongoing public sector digitalisation should be closely monitored, particularly in relation to efficiency, data challenges and cost.

Finally, productivity gains provided by digitalisation in the public sector should also be redistributed to improve the quality of working life and of services to users and should not be used to reduce employment.

More specifically on social dialogue, it seems important to:

- Significantly increase the amount of information-consultation linked to digitalisation in the employees' representative bodies.
- Go beyond a 'formal' social dialogue (need for good will among the parties, need for a 'change of level' in collective bargaining, need for a culture of negotiation to be well spread among the stakeholders). More generally, there is an increasing need for permanent social dialogue on digitalisation, to enable adaptation to a context of rapidly changing technologies.
- Extend the collective negotiations on digitalisation beyond 'teleworking' and the 'right to disconnect'. There needs to be an open and direct discussion of the impact of digitalisation on productivity gains and their distribution (and the link to work quality) between trade unions and the public employer.
- Give trade unions the capacity to negotiate the time prescribed for a given task, in jobs where this applies, as this perspective currently seriously reduces autonomy and increases supervision.

1. See Weghmann and Sankey (2022).

- Include the new occupational diseases linked to digitalisation (such as burnout) in the list of recognised occupational diseases.

At the European level, it is important to note that a European pre-agreement on digitalisation for the central and federal government was reached between the social partners in June 2022. The agreement was signed on 6 October 2022 and will have to be transformed into mandatory legislation by the Commission, providing 8 million workers with '*new or stronger protection on telework, the right to disconnect, training, health and safety, personal data, outsourcing and human-in command artificial intelligence*', according to EPSU, 13 July 2022. This European agreement, on various topics related to digitalisation (and not limited to teleworking) should then be extended beyond the central administration, to all agents or employees of the public and private sectors providing a public service, in order to raise the level of protection against negative consequences of digitalisation in Europe. The goal of further adaptation of civil service working conditions (in a broad sense) to digitalisation is of prime importance.

Social Europe still needs to be built in the area of digitalisation. European trade unionists should deepen their involvement to increasingly weigh in on this topic at the European level, which will further impact Member State level. This seems essential if digitalisation is to be of service to humankind in general and to workers in particular.

In short?

A quote from a trade unionist may sum up the research: 'There is a lack of joy in the digital space' (Int5). Indeed, in a nutshell, our research results suggest that a human presence is still necessary. From this perspective, digital devices should complement rather than replace workers, and it is very important to avoid the rigidity/constraints/adverse effects often created by algorithms/digital applications. Finally, obviously, for the public services, values of service and humanity are central!

SECTION 1. INTRODUCTION

Section 1.1 Purpose of the research

This report is part of a larger European research project on *'The impact of digitalisation on job quality and social dialogue in the public services (DIGIQU@LPUB)'*, led by the European Social Observatory (OSE) and founded by the European Commission. This work also benefits from support from the European Public Services Union (EPSU).

In recent years, public sector workers are increasingly using connected organising tools and methods that shape the way their job tasks are implemented, scheduled and monitored. In this context, the project aims to: (i) Assess the impact of digitalisation on aspects of job quality from the perspective of trade unions but also of public service workers themselves; (ii) Investigate how the challenges and opportunities for job quality generated by the digitalisation of work in public services are addressed in social dialogue (at national and sectoral levels) in selected EU Member States.

At the core of the project are eight case studies in eight countries: Denmark, France, Finland, Germany, Hungary, Italy, Poland and Spain. Four sources of data are used to address the research question: interviews conducted with trade unionists; sectoral focus groups (collective interviews) with field workers; data from an original web survey - the DIGIQU@LPUB web survey ⁽²⁾ (DGQS); desktop/literature research.

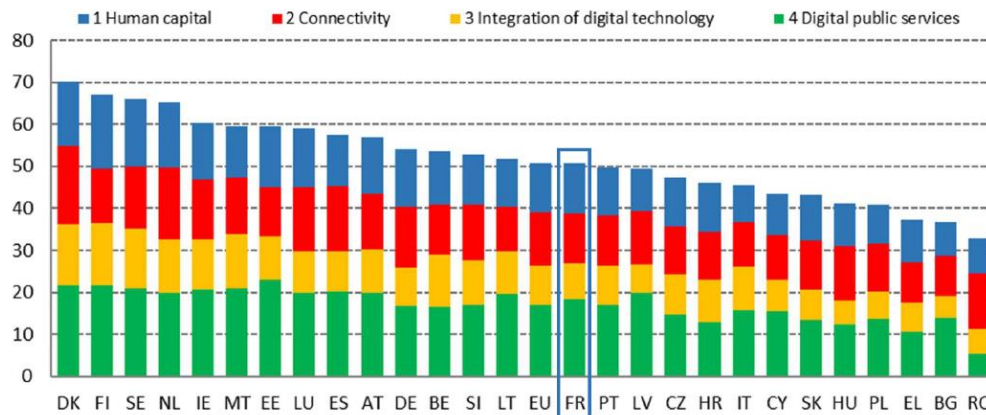
This report analyses the impact of digitalisation on job quality and social dialogue in France. As in the other case studies, the focus of the research is on three public service sectors: electricity suppliers, public administrations and hospitals.

Section 1.2 Digitalisation: state of play and national strategies

1.2.1 Latest DESI Index and overview of digitalisation in the economy

France ranks 15th among the Member States in terms of overall DESI (Digital Economy and Society Index), with a score of 50.6 - around the European average (50.7), in the 2021 edition of the index (European Commission, 2021). France's DESI index has also shown similar growth (and value) in recent years to the EU average.

2. This online survey generated 167 responses from the electricity sector, 91 responses from the public administration sector, and 380 responses from the hospital sector. The results of the survey are not necessarily statistically significant but nevertheless give an insight into workers' personal experiences, to complement and contrast with the trade unions' visions.

Graph 1. Digital Economy and Society Index (DESI) ranking for EU countries (2021 edition)

Source: European commission (2021)

This intermediate position is reflected in the digital skills of the population, equivalent to the EU average once again (with 57% of the population at basic skills level and 31% at advanced skills level). France performs better than the EU average in terms of digital public services, but worse in terms of 'connectivity' and 'integration of digital technology' (see table 1). Most of the sub-components of these different dimensions have improved in recent years.

Table 1. DESI (global and sub-dimensions) for France and the EU (2021)

DESI 2021	France		EU
	rank	score	score
Global index	15	50.6	50.7
Human capital	14	47.4	47.1
Connectivity	17	47.4	50.2
Integration of digital technology	19	34.8	37.6
Digital public services	13	73	68.1

Source: European Commission (2021)

The French *Institut national de la statistique et des études économiques* ⁽³⁾ (Insee, 2019) provides a global perspective on digitalisation in France. It shows that in 2017, 84% of households have an internet connection at home, that is, two times more than a decade ago. It also observes that IT equipment and practices are becoming more 'mobile'. Around 80% of people (more than 15 years old) have used the internet in the last three months leading up to the survey, yet 20% of the population have no digital skills at all. A surge of digital platforms and digital trade is observed in the economy. At this time, digital sales already accounted for 30% of

3. National institute of statistics and economic studies.

turnover for enterprises of 250 and more employees (this turnover has doubled in the period 2007-2017). In general terms, Insee reports unequal distribution in digitalisation among the population as well as among enterprises. Insee also underlines that the massive increase in ICT use is not due to an increase in the share of ICT-intensive occupations, but rather to a general increase in ICT use in most service occupations.

On the basis of the Working conditions survey, the *Conseil d'orientation de l'emploi* ⁽⁴⁾ (COE, 2017c) confirms that digital technologies are very unequally distributed among the economic sectors. In particular, the digitalisation rate is rather weak in the agriculture and construction sectors, while it is very high in the information and communication sector, and the finance and insurance sector. The three sectors of interest in the present research ⁽⁵⁾ exhibit quite advanced levels of digitalisation: the energy sector is the most digitalised among the three sectors: 80% of businesses have 'moderate to intense digitalisation'. Administration (grouped in the same sector as technical and scientific activities) is slightly less digitalised, with a 75% level of moderate to intense digitalisation, while the health sector (including education and social action) displays a 63% level of 'moderate to intense' digitalisation.

1.2.2 Digital national strategy

For more than a decade, France has implemented numerous initiatives related to the digitalisation of the economy, including the following:

- In order to implement the (non-normative) European *Digital Competence Framework* (or *DigComp*), which encompasses 5 different types and 8 different levels of digital skills, France created the digital platform PIX ⁽⁶⁾, launched in 2017. PIX provides companies with a tool for auto-evaluation of digital skills (allowing them to track the development of these skills).
- A *Digital Plan for Education* was established in 2015 in order to prepare schools and young people for 'the challenges of a changing world', notably offering funds to introduce new ways of digital-related learning.
- The *Grande Ecole du Numérique (School of digital technology)* brings together accredited training and certification bodies related to the digitalisation of the economy. It is equivalent to a training network, aimed at inclusivity and training for job opportunities in digital professions.
- Some 50 *Occupation and qualification Campuses* were set up in 2013 in order to promote local development initiatives. 10% of them depend directly on the digital sector.

4. The Employment orientation council, a pluralistic body attached to the Prime Minister and in charge of expertise and concertation on employment.

5. Approximate in their scope in this source relatively to what they represent in the research.

6. No specific meaning, only a probable link to 'pixel'.

- The *Competitiveness clusters* strategy was launched in France in 2005 and consists of State-accredited networks of enterprises and research institutions aiming to attract funds through participation in a common project in the innovation and advanced technologies sectors. In 2020, there were 55 clusters in France (Grandclement, 2020), including some specifically related to digital or biotechnology.

Regarding the response to the COVID-19 crisis, the French *Recovery and Resilience Plan* (see French government, 2021a) has proposed investments which require a €40 billion participation from the EU, of which €8.4 billion are targeted at the country's digital transition. More generally, the 2020 French recovery plan (*France Relance*) lists various priorities related to digital sovereignty (supporting key digital markets), digital upgrading of small and medium companies, digital upgrading of the public administration (for which a €500 million budget is planned), digitalisation of training and investment in digital skills. The latest 5-year investment support plan for the economy, *France 2030* (see French government, 2021b), presented in October 2021, plans to use €30 billion in funds to develop industrial competitiveness and technologies of the future, of which an important part should relate to digitalisation projects. These various plans are geared to supporting the digitalisation of the French economy during the COVID-19 pandemic and beyond, generally aiming at accelerating the rate of digitalisation observed before.

Section 1.3 Research on the impact of digitalisation on job quality at cross-sectoral level: state of the art

1.3.1 Potential job substitution

The famous study by Frey and Osborne (2013) had a strong impact at the time, estimating that 47% of jobs are threatened in the long run by automation in the US. Successive studies and recent works generally estimate a (often much) lower impact in terms of job destruction, yet still on quite a large scale.

For France, regarding the effect of digitalisation on job destruction, it is estimated that around 9 to 42% of jobs can be automated (France Stratégie, 2016; Roland Berger & Cap Digital, 2014; Arntz, Gregory and Zierahn, 2016). The last study of importance on the topic was from the *Conseil d'Orientation de l'Emploi* (COE, 2017a): COE estimates that less than 10% of existing jobs have a combination of vulnerabilities that threaten their existence in a context of automation and digitalisation. It also estimates that half of existing jobs are likely to experience significant change in content. Yet, unskilled or low-skilled jobs, notably in industry, are overrepresented among the vulnerable jobs. This supports evidence of a 'skill-biased technical change' (*e.g.* Chusseau *et al.*, 2007), *i.e.* technological change favours (higher) skilled jobs, mainly non-manual

and non-routine tasks. This is confirmed in other works (Pak and Poissonnier, 2016; Reshef and Toubal, 2019).

1.3.2 Productivity and net effect of digitalisation on jobs

A more indirect (and negative) effect of digitalisation on employment comes through productivity, which is generally enhanced. Yet, the net effect on employment is difficult to predict. Even if productivity is enhanced, compensation mechanisms can reduce or even fully offset the initial job losses (COE, 2017a) The magnitude of these impacts depends on various factors: institutional context, functioning of the markets, quality of the services/products, costs of capital and labour, possibilities of substitution between these two factors, expectations of economic agents.

Besides threatening some existing jobs, digitalisation also changes the nature and structure of jobs in the economy (for instance, see COE, 2017a). Moreover, digitalisation also creates numerous outcomes for workers in terms of physical and mental health, work-life balance challenges, or career prospects and (workplace) rights.

1.3.3 Work organisation

1.3.3.1 Content of work

A large proportion of jobs are becoming more complex with digitalisation. For these jobs, the content of tasks shifts from routine (replaced by machines) to non-routine, cognitive tasks. ICT may blur boundaries between occupations or merge them. The observation that jobs are becoming more complex due to digital technologies is confirmed by Branche-Seigeot (2015), who highlights an increase in the main skills required for changing jobs.

COE (2017a) also shows that the change in the skills required on the labour market has been driven by the emergence of new jobs in the digital domain, involving new and more complex tasks. Among the new 149 occupations that have emerged since 2010 in France (*ROME - Répertoire Opérationnel des Métiers et des Emplois* ⁽⁷⁾ classification), 105 are in the digital domain.

In terms of outcomes for workers, COE (2017c) concludes that digitalisation is ambivalent: it renders work more interesting but also in some cases impoverishes and empties it of its meaning. The report underlines that the likelihood of finding one's work interesting, complex and intensive increases with greater use of digital technology. Yet this feature is true up to a certain

7. Jobs and positions operational directory.

level of digitalisation: beyond that, digital technology can make work less interesting and intensive, while it remains equally complex.

1.3.3.2 Collaborative organisation

The Mettling report (2015, commissioned by the Minister of Labour) insists that digitalisation creates new professional groups, with more collaborative work methods, breaking with the reporting and control culture. It also leads to the design of new workspaces, which are more open, friendlier, favouring exchange and cooperation rather than the individual appropriation of a defined space (or the anonymity of open spaces).

COE (2017c) underlines that flexible organisation is more likely to be implemented in highly digitalised institutions. There is not necessarily a causal link, as this phenomenon can be explained by the size of the establishments. It also states that digitalisation entails a breakdown of the spatio-temporal configuration at work, and intensified cooperation and collaboration. Yet, it has to be noted that typically the isolation of individual workers working from home can also cause harm to work teams, especially when a large share of days are spent teleworking. Similar observations can also be made for managers who telework.

1.3.3.3 Management tasks and skills

The Mettling report (2015) considers that managerial skills have to evolve to take on characteristics of project management, remote management, but also facilitation of communities, and to cope with the change in the relationship of subordination between the worker and the manager. The report also highlights the importance of local management for the success of digital transformation. The manager has to resolve the contradiction between autonomy and control. Moreover, he has to deal with a wider range of external and internal resources.

Mallard (2011) observes that hybrid forms of coordination (hierarchical, project and network) make it more difficult to set and evaluate objectives for workers. Digitalisation has thus exacerbated the pressure on managers to demonstrate their responsiveness in organisations seeking agility, innovation, or the ability to overcome obstacles. Research into creativity at work (Amado *et al.*, 2017: 107-126) illustrates this: managers (like employees) face paradoxical injunctions such as *'be creative while respecting the organisational culture'*.

1.3.3.4 Autonomy and Control

According to the Mettling report (2015), digitalisation may lead to empowerment (autonomy, ability to take initiatives, no more working in separate compartments and hierarchies, horizontality, peer evaluation, project-based operation). Yet it can also lead to a 'big brother' scenario by strengthening management supervision by the use of management indicators (see also Dujarier, 2015). These two scenarios depend on various parameters, implying an absence of technological determinism.

According to Rallet and Wolkowiak (2004), the use of ICT may grant employees more autonomy and responsibility by giving them more freedom in the organisation of their work. Cousin (2004) also considers that digitalisation has given executives more autonomy and freedom, through a change in their relationship with their company. The author also notes a disengagement, withdrawal of executives from their company: they no longer identify with it, but with the *'projects they manage, supervise, organise, or lead'*.

COE (2017c) notes that new technologies have been developed to replace the foreman in the traditional Taylorian system: sensors, drones, geolocation devices, internet of things (IoT), supported by algorithms and big data. These devices allow for (much) greater monitoring of the worker's performance. They can also foster deeper division/codification of work, increasing checks (more numerous/complex) on workers. These technologies allow for a more precise measurement of individual performances, making pay-for-performance possible.

1.3.4 Working time

Digitalisation may impact working time in various ways (COE, 2017c). It can indeed render work more intense and encourage a boom in the hours worked or give more freedom by encouraging better management of working time by the worker him or herself.

1.3.5 Health and Safety

COE (2017c) insists that digitalisation can reduce physical effort and awkward postures (reduction of physical constraints), but also shift constraints or increase the level of cognitive attention and the complexity required at work (increase in psychological constraints). Numerous French or international studies also report that teleworking leads to an increase in musculoskeletal disorders (8).

1.3.6 Skills and learning

The report by COE (2017b) concludes that several studies have shown a relative increase in the complexity of existing jobs linked to the diffusion of new technologies, marked by a rise in analytical and relational skills. The report notes, especially for executives, a general need for transversal skills. The increased requirements for analytical and interactive skills do not imply the

8. According to a 2021 survey by UGICT-CGT (*Union générale des ingénieurs, cadres et techniciens CGT*-General Union of Engineers, Managers and Technicians of the CGT confederation), 4 out of 10 respondents report more muscular or skeletal pain since they have been teleworking. They are also found to be more anxious.

disappearance of technical skills, which remain central to many professions, and which they complement (Berger and Frey, 2016) ⁽⁹⁾.

The same report identifies three skill groups impacted differently by digitalisation: *(i) expert skills* in new technologies, in the technology sector itself and the rest of the economy, *(ii) new technical skills* in connection with the expected reorganisation of about 50% of jobs (not necessarily digital skills), and *(iii) 'transversal' skills* (or 'soft' skills, including social ones), which increase for all workers, and which include general digital skills, cognitive skills (literacy, numeracy) and social and situational skills (ability to teamwork, project management, problem-solving capacity, *etc.*). The increasing use of technology in the workplace makes these cross-cutting skills essential.

The need for digital upskilling for many and specific populations is suggested in various national or sectoral studies. Again, in France, 13% (3.3 million people at the time of the study) of employed people exhibit insufficient digital skills, while 30% (7.6 million) are averagely equipped for the requirements of a digitalised economy (COE report, 2017b). The same source underlines that at least a third of the French population do not display sufficient digital skills (8% do not have any digital skills; 27% need to make progress to be more comfortable). COE (2017b) also states that there is a need to improve training, especially for low-skilled workers (more vulnerable to automation).

1.3.7 Reconciliation of work and personal life

Digitalisation means that workers can be reached during a much larger time slot (and more often outside of 'regular' working hours) because of higher flexibility in working time and/or increasing workload or task complexity. This can entail disconnection issues and blurring of the boundary between personnel and professional life ⁽¹⁰⁾, a feeling of isolation (some personal relations are replaced by virtual contacts), and increasing difficulties achieving a good work-life balance due in part to work pressure but also driven by the 'fear of missing out' syndrome (OSE and EPSU, 2018).

1.3.8 Career prospects and employment security

In French studies, the influence of digitalisation on career prospects and employment security has mainly been studied in terms of (see sections 1.3.1 and 1.3.6): *(i)* the potential job destruction effect, which may impact workers with jobs which can be automated, *(ii)* the

9. The authors show that, in the US, many jobs which appeared after 1980 were linked to the digital transition, and became much more abstract, which has in turn increased the demand for analytical and interactive skills.

10. The UGICT-CGT survey (2021) shows that teleworking blurs the boundaries between work and personal life: 'When teleworking, nearly two-thirds (61%) of respondents experience difficulties in balancing their private and professional lives'.

potential effect on job evolution, as around 50% of jobs may significantly evolve with/in the context of digitalisation, and (iii) the skills required and ability for workers to train themselves and update their job or the need to upskill to find a new job.

1.3.9 Workers' rights

Regarding contractual arrangements, COE (2017c) shows that digitalisation has led to the development of a 'gig economy'. This is particularly due to the very significant growth of collaborative platforms, which have created a large number of 'casual' jobs.

The recent 'right to disconnect', enshrined in a 2016 law ('Labour Law'), came into effect in 2017. The share of company-level collective agreements referring to a right to disconnect or implementing measures to render it effective seems to be increasing, but they are not yet in the majority (Fleury *et al.*, 2022). A recent survey by UGICT-CGT (2021) underlines that more than two-thirds of the teleworking employees who responded (69%) report that they work at least 'occasionally' outside of their normal working hours, which suggests that the 'right to disconnect' set out in the labour law is yet to be totally effective.

SECTION 2. IMPACT OF DIGITALISATION ON JOB QUALITY

Section 2.1 Electricity production and distribution sector

2.1.1 Overview of the sector

EDF ⁽¹¹⁾ was created in 1946. As a public monopoly, it was responsible for the production, transport and distribution of electricity. In 2008, when the sector was opened up to competition (EU strategy), EDF split and the electricity sector is now divided into 4 sub-sectors: production (the main actor is EDF), transport (the main actor is RTE ⁽¹²⁾), distribution (the main actor is ENEDIS ⁽¹³⁾) trade in electricity (with many private actors ⁽¹⁴⁾). In 2019, these four sub-sectors taken together accounted for 1.4% of total value added in the economy. For the purpose of this research, we will focus on the production and the distribution sub-sectors (EDF and ENEDIS).

In 2020, according to ACOSS ⁽¹⁵⁾, total employment in the electricity sector (production, transport, distribution, trade) amounts to around 124,000 employees, representing

11. Electricity of France.

12. Gestionnaire du Réseau de Transport d'Electricité (Transport network manager).

13. Gestionnaire du réseau de distribution d'électricité (Supply network manager).

14. Competitive sector: TotalEnergies, EDF, Engie, Direct Energie, Eni, Enercoop, Ohm Energie, Iberdrola, ekWateur, Planète OUI, MegaEnergie, *etc.*

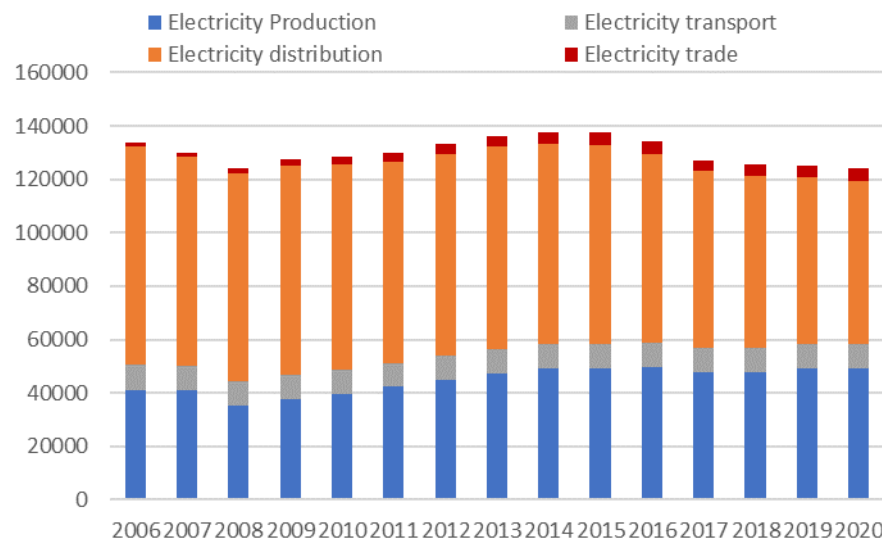
15. Agence centrale des organismes de sécurité sociale (Central Agency for Social Security Organizations).

around 0.4% of total employment in France in that year (Graph 2). The production and the distribution sectors account for 49,000 and 61,000 employees respectively.

With regard to the last fifteen years, a peak of employment was observed in 2015 in the electricity sector as a whole (with 137,671 employees), after the 2008 crisis. After the peak, we observe a steep decrease of around 10% in the last 5 years. Over the whole period, the sector lost around 10,000 jobs, mainly because of two different trends: a rise of + 7,800 jobs in the 'production' sub-sector, and a significant decrease of 20,700 jobs in the 'distribution' sub-sector (see Graph 2).

More precisely, the 'electricity production' sub-sector grew between 2006 and 2015 (+ 19%) and then stabilised between 2015 and 2020. This growth in employment can be explained by the development of renewable energies and new nuclear power plants supported by EDF. In France, 80% of electricity is from nuclear power, which is very job intensive.

Graph 2. Employment in electricity sub-sectors (2006-2020)



Source: ACOSS data series

At the same time, the 'electricity distribution' sub-sector lost jobs over the whole period 2006 - 2020 (-25%). ENEDIS, the main actor in the sector, also lost jobs over the period. The management of ENEDIS explained in the press in 2018 that the job cuts were due to the development of digital and teleoperated activities (which notably reduces the meter reading occupations), the reduction of management staff, and the closure of small local sites due to the increasing importance of the internet at work. Moreover, the loss of jobs in the distribution sector can be explained by the fall in job mobility between EDF (production) and ENEDIS (distribution). For example, between 2017 and 2018, transfers between the two subsidiaries fell by 20% because of the reduced staffing needs in the distribution sector.

Technicians represent 50% of employment in the gas and electricity industries; managers and operational workers make up 35% and 15% respectively (Opco 2i, 2020).

In the electricity production and distribution sectors, aside from administrative/human resources functions, professions range from research to design, from operation to maintenance and from sales to marketing.

2.1.2 History and patterns of digitalisation in the sector

The French electricity sector faces numerous challenges. One of them is the climate emergency and the resulting energy transition. The integration of renewable energies into the electrical grid, to tackle global warming, disrupts the architecture of the system because most of these energies are intermittent and located all over the French territory ⁽¹⁶⁾. Thus, the increased number of electrical production points decentralises the electricity system. In addition, new uses are emerging as well as some important new market developments (electrification of the economy, e-mobility, smart cities, storage of electricity, peer to peer transactions, 'vehicle to grid' architectures ⁽¹⁷⁾, etc.). These features make it more complicated to manage the balance between electricity supply and demand.

In response to this new complexity, to ensure a balance between production and consumption, but also to modernise the network (optimise the allocation of electricity and improve the efficiency of steering), electrical networks are becoming 'intelligent'. 'Smart grids' are being developed, Linky meters, artificial intelligence (AI), robotics, drones, are being implemented. Energy is becoming '4.0' (du Castel, 2018).

Linky meters, in particular, are smart meters which increase information on electricity consumption by a factor of 2,000 to 4,000. These meters follow in real time the electricity consumption of nearly two-thirds of French homes. The Linky meter allows for automatic remote operations and remote diagnostics from troubleshooting call centres. Thus, the Linky meter generates a lot of data which is analysed and used by the network internally, to plan and evaluate the grid in order to be more productive and optimise the balance between consumption and production. Finally, the development of the intelligent network has encouraged the electricity sector to engage in a movement towards big data (Derdevet, 2017). The sector is gradually becoming digitalised and is more and more data-driven.

16. Each year, France welcomes more than 30,000 new electricity producers.

17. V2G is a technology that allows the energy stored in the battery of an electric vehicle to be drawn out and redistributed to the electrical grid.

The people interviewed in this study reflect on the growing importance of data in the sector. Two interviewees from the electricity distribution company (ENEDIS) confirm that the implementation of Linky meters has greatly accelerated the digitalisation of the sector thanks to the real-time digital data they provide (INT6 and INT10, see table in Annex). According to them, technicians at ENEDIS have experienced the rising importance of digitalisation and especially of data for several years now. They both describe how 'digital work orders', in line with the increasingly data-driven digitalisation of the sector, have become an increasingly important part of technicians' daily lives. Interviewees observe that other forms of digitalisation have gradually entered the electricity sector: new IT media, new applications, artificial intelligence, robotics, augmented reality, programmed maintenance, digitalisation of administrative files and HR procedures, *etc.*

As for digital work orders, two interviewees (INT10 and INT6) explain that at ENEDIS, every morning, technicians receive digital work orders on their tablet with precise instructions on the work to be carried out (location, sequence of actions to be carried out for each work order, time associated with these actions, time associated with travelling to the work site, etc.). A service has been created to send this information, 'the service of units specialised in the digital planning of these workers/technicians'. Once a task has been carried out, the technicians enter the feedback data (figures, photos, videos) directly onto the tablet and the data is sent to the digital media of all the people following the intervention in real time. Before the digitalisation of work orders, technicians relied on paper files to carry out their daily tasks and had to search for the documentation associated with each task.

In the electricity production sector, at EDF, similar digitalised work patterns can also be seen. Indeed, INT9 and INT8 point out that in EDF's nuclear and thermal division (DNPT), the technicians responsible for plant maintenance receive precise information on the acts to be carried out directly on their tablet, with the associated documentation, procedures and tasks (refuelling, changing a pump, changing a thermometer, checking the flow of a pipe). At EDF, these files are called 'e-DRT' (work completion files). As at ENEDIS, before digitalisation, these work files were in paper format and could amount to between 50 and 100 sheets of paper.

In both cases, in the electricity distribution and production sectors, the information provided to technicians on the actions and techniques to be carried out for each intervention comes from a large database, which adds to the empirical and documentary data. At ENEDIS, INT10 and INT6 report that the technical actions are listed in a 'time ranges' database. This database associates each work unit with a specific timeline for the execution of the task. For example, the time needed to replace a Linky, which is a unit of work, is set, through the 'time ranges' database, at about a quarter of an hour. This database is based on the history of the technicians' interventions at national level, measuring the time taken by each technician and using the data sent by the technicians as feedback. The technicians interviewed in the focus group (FG1) add

that the intervention time may be modified to fit with the number of interventions a technician has to carry out during his day. The 'modulation coefficient' (*i.e.* productivity coefficient) may also be modified to gain some intervention time. The same is true for the power production sector (EDF). Two interviewees (INT9 and INT8) explain that the work orders (e-DRT) come from a database that lists 40 years of interventions on the same tasks with the same materials and the same techniques. In other words, it is a maintenance database that uses documentary data and past intervention files, which themselves are the result of extremely organised and constrained intervention processes. The documentary data is derived from the regulatory corpus for nuclear safety (WANO - World Association of Nuclear Operators).

Regarding new IT media, over the past five years, digitalisation in the electricity distribution sector has been reflected in the increased use of IT media (smartphones, computers, tablets) (INT6). The results of the DIGIQU@LPUB survey (DGQS) confirm this view: 99% of respondents say they regularly use these digital media. For example, technicians receive digital work orders daily on their tablet (see example above) and also use their tablet to remotely program a Linky meter. Depending on the job, employees have access at all times on their smartphone, tablet and computer to different applications, which are specific to each job, the 'business applications'.

In terms of applications and information systems, two interviewees from the nuclear sector at EDF note that there are more and more applications on employees' computers, smartphones and tablets (INT8 and INT9). They mention email applications, instant messaging applications (Teams, Skype) which are on the rise, online discussion tools such as WhatsApp or Telegram and organisational software such as Outlook calendar. According to DGQS, 92% of respondents use IT media to communicate with colleagues and internal or external departments. The project manager and the technician interviewed in the FG1 also confirm that they use tablets and computers (computer for 100% of the project manager's daily work and tablet for 50% of the technician's daily work).

In addition to these standard applications common to all, there are numerous 'business applications' specific to each business or task. 76% of respondents to the DGQS use online applications to exchange with the partner network. For example, technicians use several applications during the day on their tablet to enter feedback data and consult documentation. INT6 also cites the example of employees at reception desks and call centres who, since 2021, have been working with telephone applications integrated into the computer. These tools are interactive voice servers (IVS) and telephone dispatchers. They initiate the conversation on the computer tool with the operator and distribute the incoming calls.

INT6 also notes that other information systems have been progressively installed for employees at ENEDIS reception desks. These are information systems that control workflows (workflow

management software such as KIAMO and INJIXO). These tools (workflow management) calculate and anticipate the activity over the day and adjust the workforce according to the activity. Thus, with these 'workflow management' information systems, employment evolves according to schedules and activity. Finally, 76% of DGQS respondents say they use digital media to measure, collect, organise or retrieve data.

Artificial intelligence (AI) and robotics begin to be present in several jobs in the electricity distribution sector. According to INT10, '*artificial intelligence is on our doorstep*'. INT6 and INT10 note that AI is being used to dispatch work requests. More specifically, in the ENEDIS 'work intention request' service (dealing with the digital planning of technicians' interventions), some types of software have AI kernels. When there is an indication that an intervention is required by ENEDIS (breakdown, accident, damage to an installation on the network), the software detects it and analyses the nature of the incident. Then, it sends intervention requests to the technicians directly to their tablet, according to the nature of the incident and the technicians' qualifications. Thus, the AI is based on a database of the different types of incidents but also on the database that contains the different qualifications of the technicians. The more databases are provided, the more the AI will learn to work by itself.

In the human resources (HR) department of EDF, robotisation has taken the place of low-value activities (checking payrolls on tables). The robots compare the monthly payrolls and detect differences in remuneration on certain pay slips (INT7).

There is also a trend towards digitalisation of administrative files and automation of HR procedures: employees who have a question about their administrative rights now have to make e-requests on a portal, whereas before they made direct contact with a HR employee. All employees' paper files have been digitised (INT10 and the human resources employee interviewed in FG1). In 2016, the EDF HR department digitised more than 70,000 administrative files of employees, with the aim of standardising employment contracts (INT7).

Some applications allow scheduled/predictive maintenance to be carried out at EDF: software available on the tablets of certain project managers sends annual signals to launch major maintenance cycles. Previously, employees had to read paper records and calculate the periods for launching annual maintenance cycles (INT8).

Both the electricity generation and distribution sectors have opened up to the practice of teleworking. EDF and ENEDIS referred to telework in the TAMA ⁽¹⁸⁾ agreement for EDF and TAUTEM ⁽¹⁹⁾ for ENEDIS. Eligible employees are entitled to 2 to 3 days of telework per week. According to DGQS, 88% of respondents say they telework partly or totally. Only 6% of respondents never telework. Among the respondents who telework, most (42%) telework 2 days a week, 32% telework 1 day a week and 19% telework 3 days a week. Only 1.3% telework more than 3 days a week.

Lastly, new recruits to EDF in the nuclear division can attend augmented reality training when they join the company (INT9). Thanks to the augmented reality headset, new recruits can explore the nuclear power plant, since the plans have been produced in digital format and in virtual images. Newcomers can thus virtually immerse themselves in the 'nuclear islands', which avoids the need for numerous access authorisations and potential risks. INT9 adds that the virtual reality headset can also be used by employees throughout their career, during specific training on certain technical acts. For example, employees can follow a training session in augmented reality on opening a valve. In this session, the employee can manipulate a valve virtually and learn to master it in a complete simulation of the intervention. Thanks to augmented reality, the physical force required to handle the valves is fed back to the operators, making the training very realistic (but there are no smells or noises yet).

2.1.3 Work organisation

2.1.3.1 Intensity and pace of work: increased intensity and productivity gains

Digitalisation and the introduction of new digital tools speed up the pace of work for certain professions. This often leads to increased productivity and time savings. However, this time saving is not always reflected in a reduction in working time, but rather in an increase in the number of tasks performed by employees.

According to INT6, digitalisation intensifies work for technicians (see section 2.1.3.5), but also for other professions, particularly for call centre workers. In the call centre service, telephone dispatchers and interactive voice servers (which automatically initiate the conversation with the operator) are speeding up the pace of the service: the time between two incoming calls has dropped from 30 to 20 seconds. Thus, the tasks are repeated and accelerated, which makes the work more difficult: *'it's a bit like assembly line work'*.

INT6 adds that, for certain jobs, employees can have up to 15 applications open on a maximum of 5 screens, which increases the intensity of the work. The project manager interviewed in FG1

18. Travailler Autrement, Manager Autrement.

19. Travaillons Autrement et Transformons Ensemble nos modes de Management.

explains that the increasing intensity of work comes from the stacking of communication channels, with different employees using different channels which do not communicate with each other (Teams, WhatsApp, e-mails, etc.). In addition, the massive influx of e-mails also contributes to the increased work intensity *via* 'information overload', as well as to the increase in working hours (see section 2.1.4).

This view is confirmed by the results of the DGQS. Indeed, 67% of respondents believe that digitalisation increases the pace and intensity of work. Only 14% think the opposite and 19% think that digitalisation has no effect on the pace of work.

Digitalisation can also, in some cases, save time and optimise work organisation. According to DGQS, 58% of respondents believe that digital tools improve their productivity. According to INT6, managers and even supervisors have 'umbrella' applications that combine all business applications into one, which allows them to organise themselves more efficiently and save time. However, these time savings do not result in a reduction in working hours, since digitalisation encourages professional and managerial staff to work more (see section 2.1.4).

INT7 also observes that digitalisation can lead to a gain in productivity and therefore in time, for example in the case of the digitalisation in 2016 of the administrative files of 70,000 EDF employees. According to him, this digitalisation has simplified the search for information for employees in the HR department. The search for information is no longer physical (looking for administrative files in drawers) but digital. Information is classified by type and by employee. Tasks are simplified and fewer in number, which saves time on specific actions, but again it does not result in a reduction in working hours. Nevertheless, the human resources employee interviewed in FG1 notes that the updated versions of certain applications crash regularly. For example, the payroll software crashes every month. When this happens, all digital tools are stopped; the stoppage can last for 2 or 3 days and reduces productivity gains.

2.1.3.2 Changes in the nature of tasks: effects which vary between the professions

According to the interviewees, digitalisation leads to an increase in analytical tasks for some employees, at the expense of routine tasks. The DGQS confirms this point. Indeed, half of the respondents find that digitalisation reduces the time spent on routine tasks. INT7 notes that, in the EDF HR department, analytical and decision-making tasks are more frequent since the digitalisation of employees' administrative files. According to him, since this digitalisation, managers perform more advisory and analytical tasks than routine tasks. For example, robots detect pay discrepancies and managers analyse these discrepancies and make decisions based on the nature of the discrepancies.

Similarly, INT9 explains that assistants are taking advantage of digitalisation to focus on more complex tasks. For example, booking rooms for meetings, a simple and routine task for assistants, is disappearing in favour of more analytical, complex tasks with more added value.

'Nevertheless, in some cases this increase in analytical tasks to the detriment of more routine tasks may contribute to the intensification of the work of certain employees. According to INT7, the robotisation of certain HR (20) procedures speeds up the pace of work for employees. In fact, robotisation has taken over the lower value tasks that allow employees to relax and feel less stress from the need for customer satisfaction, which must be 'optimal'. 'With the arrival of robotics, these lower value activities, that allowed employees to take a breather and cut back a bit, have disappeared, which increases the intensity of work'. (INT7).

While digitalisation has enabled some employees to increase their analytical tasks to the detriment of repetitive and routine tasks, other employees have, on the contrary, experienced an increase in routine tasks.

Another interviewee (INT8) emphasises that while digital technology has freed employees from certain routine tasks, it has also led to new tasks, which are just as routine. These are the data entry tasks that employees are required to perform when using an application, via reports and feedback, which adds new routine tasks. Some employees, such as technicians, were already doing data entry before the arrival of digital technology, but other employees, such as project managers and foremen, have to feed data into the applications on a daily basis, which is new for them.

INT10 also says that digitalisation has led to new routine tasks for employees, especially administrative tasks. Now, for the past ten years, at the end of each day, technicians have had to enter their working hours and tasks into a digital format, with each task having a specific code.

2.1.3.3 Distant social and hierarchical links

According to the interviewees, digitalisation has negative effects on social relations and can disrupt hierarchical relations, leading to an increase in the workload. Furthermore, 44% of DGQS respondents believe that digitalisation reduces cooperation between colleagues (compared with 30% who think it has no effect and 26% who think it improves cooperation between colleagues).

20. The robotisation of lower value activities such as the search for discrepancies in pay slips.

In particular, according to INT9 and to the HR employee from FG1, due to the digitalisation of documents, especially pay slips, workers have a much more distant relationship with the human resources employees. In the past, workers could receive local advice from a person in the HR department who dealt with their administrative record. Now, with digitalisation, they no longer have a contact person but deal with a single department. According to INT9 and the HR employee from FG1, this leads to a loss of quality and poorer social relations. INT10 adds that because of the automation of HR procedures, employees may miss out on benefits, new rights or social benefits to which they could have been entitled. Indeed, the automation of HR procedures (e-applications) means less oral sharing of information with the employees in the HR department and an increase in written information which, according to INT10, is less well absorbed than oral information.

The loss of social ties can also be explained by the massive use of instant messaging tools which, according to INT8, reduce real exchanges between colleagues. According to her, employees move less between offices and contact each other by instant messaging instead of going to see each other.

Finally, INT9 states that the massive use of emails is changing the organisation of work and hierarchical relations, with an increasing effect on the workload. With the use of e-mails, managers can no longer ensure suitable workloads for employees, especially executives and engineers. Orders and work requests no longer go through the manager but arrive directly on the employee's computer. In other words, digitalisation provides a direct link between the manager (director or business leader) and the employee, thus removing the manager's say on how to manage the employee's workload. *'These tools become a workload trap.'*

As a result, without the filter of the manager, the worker finds himself in a position of having to assess his own level of activity. He/she is the only one who knows how heavy a workload he has. As these employees, whether executives or engineers, are supposed to be autonomous, managers pass on to these employees the responsibility for their workload.

2.1.3.4 Autonomy and control

The effect of digitalisation on autonomy is ambiguous. On the one hand, the compartmentalisation of technicians' tasks may have reduced their autonomy because it reduces the ability of employees to learn on the job, and thus their capacity to adapt, *i.e.* their autonomy. On the other hand, autonomy may be enhanced by the individualisation of work and by the consolidation of considerable information in one medium. The results of the DGQS are less ambiguous. More than half of the respondents (53%) believe that digitalisation has enhanced their autonomy to organise and schedule their tasks.

INT8 believes that the e-DRT has increased the autonomy of technicians, because they have access to all the documentation and can go and look up the various points in the regulation without calling on the supervisor. INT10 agrees with this idea and also states that digital work orders have improved the autonomy of technicians. As they are responsible for their stock of tools, technicians receive work orders directly on their tablet, interact with it and move around individually, so are more autonomous. According to INT10, this new autonomy goes hand in hand with the uberisation of the technician's job (see section 2.1.3.5). Nevertheless, he notes that this new autonomy is not recognised and remunerated at its fair value.

According to INT9, if digitalisation is accompanied by training that enables the employee to understand the digital tool, then the employee masters the tool and can be more competent and therefore more autonomous. The tool can give autonomy, but this presupposes that the employee is well trained to master it: 'It is not because you have the tool to be autonomous that you are autonomous' (INT9).

However, according to INT6, digital planning induced by 'digital work orders' has greatly reduced the autonomy of technicians, insofar as tasks deemed too complex upstream must be abandoned and are reserved for a more qualified technician ⁽²¹⁾. Digital planning reduces the ability of technicians to learn on the job: 'In this job, autonomy is not sought. There is no autonomy. In the past, work allowed people to gain autonomy by asserting themselves, by showing off on different tasks and by taking on prerogatives in order to benefit from the famous social mobility, but today social mobility is based on productivity criteria and not on autonomy. Today, productivity has replaced the term intelligence'. (...) Software does not allow for human emancipation. The emancipation of the human being is in autonomy and in the ability to adapt. Digital planning greatly reduces autonomy, and therefore the ability to adapt. (INT6).

While the effect on autonomy is seen as both positive and negative, depending on the interviewees, interviewees observe that digital tools have increased control over working time and the course of the employee's day. 53% of respondents to the DGQS state that digitalisation has increased employees' control over their output.

According to INT6, supervision has increased, both in technical and reception jobs.

In the technical professions, the tasks, which are planned digitally via the 'digital work order', are segmented and timed. According to INT6 and INT10, because of the tablet and the 'digital work

21. 'Simple' tasks are reserved for category 1 technicians, 'complex' tasks for category 2 or 3 technicians.

orders', there is increased monitoring and control of the ENEDIS technician's day by the management, thanks to the real-time recording of the technicians and the real-time monitoring enabled by the Linky meter. INT6: *'We have close electronic monitoring of work'*. The two technicians interviewed in FG1 confirm that point. They explain that all the technicians in ENEDIS have to enter the information related to the task in real time, which could allow managers to monitor their work and their location in real time. Moreover, the Linky meter allows geo tracking that could be used by the manager to closely monitor the technician's work.

In the case of employees in the nuclear sector, INT8 thinks that it is possible for managers to use badges to check how long technicians have been in the nuclear zones.

On reception desks and call centres, according to INT6, connection times are measured, as well as break times. Supervision is carried out in a pyramidal manner and break times are reduced as soon as a stand-by situation is detected: 'Everything is noted, break times, activity times, inactivity times (...) everything is recorded on a report, which is analysed by other software' INT6.

Similarly, INT8 argues that managers often check the Teams (digital tool) indicators of connection (green or red light) which indicate whether employees are active or inactive. According to INT8, HR has already sent an email to managers to remind them that monitoring of connection times is prohibited at EDF.

2.1.3.5 The effect of digitalisation of technicians' work orders on work organisation: a digital revolution involving task segmentation, uberisation of the profession and productivity gains

According to the people interviewed from the electricity distribution or production sectors, the 'digital work orders' disrupt the organisation of technicians' work, both at EDF and at ENEDIS (electricity production and distribution sectors).

First of all, according to INT6, the digitalisation of work orders (see the example of the technician's 'digital work order' in section 2.1.2.) has increased the segmentation of tasks and the intensity of work. According to him, this digitalisation of work orders has led to 'digital Taylorism', *i.e.* to a segmentation of tasks, which become more repetitive. Indeed, after each task is completed, the technicians must mark it as 'completed' in the application on the tablet and send live feedback (figures, photos) before moving on to the next task. INT6 notes that this segmentation of tasks, made possible by digital work planning, makes the work more cumbersome and leaves less room for autonomy: *'Today, there is total dematerialisation between the job and the digital planning of the intervention'*.

According to INT6, this digital Taylorism forces technicians to carry out tasks as quickly as possible, with a daily quota and an expected output. Indeed, each task is associated with an intervention time (these times are listed in the 'time ranges' database) and the technicians must not exceed this time. According to INT6, the intensity of the work has increased, due to the repetition of distinct tasks, the pace of work, the lack of autonomy, but also the computer-related difficulty.

INT10 agrees with INT6 that digital work orders imply a segmentation of tasks, which he associates with the film *Modern Times* by Charlie Chaplin. According to INT10, the pace of work has also increased sharply: *'we can't cope any more, it's too much'*. Because of the very tight digital parameterisation of intervention times and the failure to consider any contingencies like traffic jams or accidents (FG1), the employees no longer have enough time to carry out their interventions. The technicians interviewed in FG1 emphasise that the increase of the 'modulation coefficient' (*i.e.* the productivity coefficient) can also accelerate the pace of work for the technicians. This digital parameterisation of intervention times and the modulation coefficient are the subject of intense negotiations between the unions and management (see section 4).

INT10 also gives another analysis of the impact of the digitalisation of technicians' work orders. For him, this new organisation of work is gradually leading to an uberisation of the technician's job at ENEDIS, *i.e.* technicians are gradually becoming (bogus) self-employed, as they receive work orders directly on their tablet, interact with their tablet all day long and sometimes no longer go to the branch. In the morning, employees are often already on the road when they receive the orders, in which case it is a case of 'live work-taking'. INT10 adds that technicians are responsible for the stock of tools in their car (meters, tools, products). They have to anticipate and foresee variations in their tool stock according to the upcoming tasks. INT10: *'Technicians are becoming small craftsmen'*. According to him, there have been attempts by ENEDIS management to authorise the use of personal vehicles as well as attempts to geolocate employees during their working days. These attempts at surveillance, which have so far been unsuccessful, are evidence of the gradual uberisation of the technician's profession.

As with Uber drivers, the role of the phone (or tablet) is becoming more and more central to the technician's job, as explained by one technician from FG1: *'When you are in the car to go to the site of the job, the telephone is supposed to be in the glove box, but if you don't answer the phone, your manager harasses you, asking why you aren't taking his calls'*.

INT10 also emphasises that digital work orders reduce social interaction between employees. Like self-employed people in an uberised sector, employees no longer see their colleagues, leave their homes in the morning and go directly to the site of the intervention, receive information on their tablets and carry out orders. Employees no longer communicate with each other, cannot

compare and exchange. According to him, on-going fragmentation of employees and a disintegration of work teams are taking place, which reduce the sharing of information although this is essential for making collective demands. Lastly, INT10 argues that digital technology is leading to a lack of interest among technicians in their work, because of the individualisation of work that it entails.

On the contrary, INT9 emphasises the positive effects of the digital work order on productivity, efficiency and the collective organisation of work. According to him, the e-DRT is easy to handle, information is better classified and many errors are avoided because they are detected. These elements are also confirmed by INT8. In addition, this e-DRT avoids duplication of data entry and allows technical information to be shared among a group of employees. In fact, all the employees in a unit have access to the data. Thus, when a group wants to exchange information on a task, it is available in just one data source. For example, when a worker changes a cooling pump at Flamanville in a nuclear unit, he enters the information in the tool, which is then accessible to the engineers who worked on the intervention. Thanks to this feedback, the engineers can optimise their designs. Ultimately, e-DRT improves the quality of the work. With the e-DRT, the worker can retrieve existing data from a previous intervention and cross-reference the data with a map, or with another tool. The tablet allows data to be entered, but it also has sound, images and messaging, which makes it possible to provide additional information in real time. Thus, according to INT9, the e-DRT allows for optimisation, simplification and reliability of the task.

INT10 agrees that 'digital work orders' generate productivity gains but states that these gains are not redistributed, either in terms of employment or salaries. Nevertheless, technicians from FG1 underline that the digital work order allows several people to participate in the intervention: the many stakeholders involved (some of whom are not in the field) in an intervention could lead to a loss of information, communication problems and an increase in the failure rate of projects.

2.1.4 Working time

Digitalisation seems, on the whole, to increase working time. Working time is being extended through both increased work intensity and work overload. The DGQS suggests that digitalisation leads to an increase in working time. 41% of respondents consider that digitalisation leads to an increase in unpaid overtime, 69% of respondents respond that it results in an increase in working time during the evenings, nights or weekends and 47% of respondents believe that it reduces the number of break periods. Finally, more than half of the respondents to the DGQS (52%) answer that digitalisation does not grant extra time to focus on important aspects of their work ⁽²²⁾.

22. Only 27% of respondents think the opposite.

This finding is confirmed by INT9 and the project manager interviewed during FG1. Employees and managers' days are getting longer because of the influx of emails. Instead of holding meetings, the communication service sends emails, especially for management communications, in an increasingly intense manner. This forces employees, regardless of their job (sedentary or not) to endure a large flow of emails. For instance:

'Employees are caught up in the daily routine and emails add to the workload of employees, which leads to a longer working day' (INT9).

'The inflation of emails has only grown stronger with the years. There is a tidal wave of e-mails each morning, notably recurrent ones from the company itself, including a daily morning weather forecast email from the corporate, together with a text'. (Project manager, FG1).

The project manager (FG1) adds that the digital tools have made it possible to run far more projects, while the increased number of 'business' digital applications have added a lot of additional time devoted to reporting and project management-related and monitoring tasks.

Furthermore, INT9 also states that as emails do away with the manager's say on workload management by allowing a direct link between the superior manager and the employee, the workload tends to increase (see section 2.1.3.3). As employees experience a 'tunnel effect' (*i.e.* they are so focused on their screens that they do not see the time passing), this increase in workload often leads to an overrun in working hours. For INT9, everyone finds themselves setting their own working pace. According to him, some executives put an alarm clock on their telephone to stop them working in the evening. According to INT9, days can then be extended from 7 hours of work to 8 to 10 hours of work.

INT9 adds that this influx of emails and this increase in workload prompt employees to follow e-learning courses or read notes from the management during their lunch breaks or after their working day: the working day becomes longer or the training is not completed in full. INT9 concludes by saying that digital tools intensify the workload, lengthen the working day and isolate employees because they find themselves alone in managing their workload.

2.1.5 Health and safety and outcomes for workers

Digitalisation, although immaterial, may have positive effects on the physical health of employees, if digital tools prevent employees from entering risky physical situations. According to

the DGQS, only 8% of respondents stated that digitalisation has a positive effect on physical health.

INT7 confirms this point. According to him, the digitalisation of administrative files in the HR department has led to a reduction in full-blown accidents at work because employees move around less and carry fewer heavy loads. He notes both a reduction in accidents (*e.g.* foot caught in an unclosed drawer) and a reduction in musculoskeletal disorders linked to carrying heavy loads. Yet according to the DGQS, only 4% of respondents said that digitalisation had enabled them to reduce their exposure to the risk of physical accidents at work.

Virtual reality (VR) can also help to reduce physical risks. According to INT9, training and immersion in VR can reduce exposure to radioactive risk and other risks related to nuclear power plants. Augmented reality makes it possible to avoid the constraints linked to 'nuclear islands' in terms of risks and loss of time (necessary equipment, travel time of about 30 minutes, protection from radiological flows).

Nevertheless, digitalisation has above all negative effects on physical health. This is what nearly half of the respondents (49%) declare to the DGQS (physical fatigue, headaches, neck and back pain, vision problems, obesity, tendonitis).

INT8 and the participants in FG1 state that employees can have posture problems from sitting in a static position for too long, due to the increased time spent on screens. INT8 also considers that digitalisation can indirectly lead to work accidents, because vocational training courses are frequently e-learning and therefore of lower quality. Furthermore, he adds that for several years, certain professional tasks have been taken as acquired or as part of the job thanks to e-learning training: but he considers that these e-learning courses are not of high quality and are less well taken in by employees than face-to-face training this leads to more errors in tasks and an increased risk of accidents. This view is shared by the participants in FG1. For them, e-learning leads to a rise in work accidents in the field because the skills are not properly absorbed by the employees and because of the lack of 'in-situ' training.

INT10 adds that accidents at work can be caused by a lack of communication between employees. According to him, the uberisation of the technicians' job isolates them from each other and progressively reduces their exchanges: *'A lack of communication between employees can lead to accidents at work because in practice communication helps to prevent occupational risks.'*

The participants in the sectoral focus group (FG1) point out that accidents at work are also caused by missing information from the AI which dispatches work requests concerning tasks for

technicians (see supra). For instance, there is sometimes no information about the 'hot spots' where there is a greater risk of being attacked and where technicians have to work in pairs for safety reasons (or have to be accompanied by the police). In particular, the technicians interviewed in FG1 explain that the private providers used in the electricity distribution sector for technical interventions are more often victims of accidents at work, notably due to lesser awareness of security rules.

According to the interviewees, digitalisation in many cases also impacts (negatively) mental health. 40% of respondents to the DGQS declare that digitalisation negatively impacts their mental health (stress, mental fatigue, demotivation, anxiety, isolation).

Since the rise of digital technology, INT6 notes an increase in the number of psychosocial risks and burnouts (declared and undeclared) in the electricity distribution sector. Particularly for call centre employees, INT6 underlines the psychosocial risks linked with the very fast pace of work and output demanded and the reduction in the time between two calls (from 30 to 20 seconds). According to him, the reduction in break times speeds up the pace, does not allow them to relieve pressure between two calls, and can lead employees to botch the forms, which can mean a risk of customer dissatisfaction. The reduction in break times leads to a build-up of pressure, and at the end of the day employees are exhausted and there may be a risk of burnout. In addition, the response rate has to be 100%, which increases the stress on employees. Thus, according to INT6, in the reception professions, there is a '*digital steering of the human*'. He also states that '*Ethically, I am against this digital control of human beings. The software should simplify life and not dictate what employees should do. The software must be indicative but not decision-making. It must not take the place of the human being.*' (INT6).

For employees in the HR department of the electricity production sector, the increase in productivity that followed the digitalisation of administrative files generated malaise in the HR teams. According to INT7, this has led to an increase in sick leave within the EDF support services department. On average, INT7 cites 17 to 19 sick days per year per employee, a record at EDF: '*there are problems of attractiveness in the HR profession. There are a lot of job vacancies. Knowing that the job has changed and that there is a lot of unhappiness does not attract candidates.*'

For technicians, according to INT6, it is also the pace of work that leads to a deterioration in mental health (stress, sequencing of tasks, close supervision, short time associated with each task): '*the whole day is written down, and all actions are listed and measured: break times, activity times, inactivity times. Everything is noted and analysed by software in a summary report.*'

INT10 adds that the stress suffered by the technicians comes from a feeling of loneliness. Before the 'digital work orders', the technicians had contact with the supervisors. Now, technicians are alone with their tablet and have to execute orders. Besides, stress also comes from the overload of work, which is experienced due to the drive to optimise work processes. Participants in FG1 also underline that the impression that one is connected constantly on digital tools whereas real social ties are being loosened increases stress.

For managers and supervisors, it is the inability to disconnect that triggers psychosocial risks (see section on disconnection). Stress can also be caused by requests, by e-mails or instant messaging, which cause employees to interrupt their work to respond (INT8 and the participants in FG1). As pointed out by INT6, *'the digital world is a first-class generator of burnout. For several years, the number of cases of burnout has been exploding. Among CFDT members, there were no cases of burnout in 2017 and today there are several cases. But digitalisation is not necessarily the only cause (there is also COVID).'*

Finally, in the electricity production sector (at EDF), half of the employees believe that digitalisation has a negative effect on their work (source: MyEdf survey ⁽²³⁾, and INT8). Psychosocial risks felt by some employees stem from their feeling of being obsolete, of being downgraded, which has an impact on mental health and on their self-esteem: 'people are saturated by all the digital tools. Employees find it difficult to cope with all the new applications. It gives some employees the impression that they are obsolete. You have to put meaning and reason behind digital tools. But as digital tools will be part of the future, we need to rethink their use.' (INT8).

While the individual interviews reveal a very negative impact of digitalisation on mental health, the results of the DGQS show that employees seem to link digitalisation to an improvement in their well-being at work. Indeed, 53% of respondents to DGQS believe that digitalisation has a positive effect on their well-being at work, while 27% believe the opposite and 20% believe there is no link between the two.

2.1.6 Skills and learning

According to INT6, digital planning has led to a reduction in the ability of technicians to learn in the field. For example, if a technician realises on site that the power failure is not due to the cause indicated in his work order and that the intervention is in fact more complex, he is not entitled to try to repair it (which would have possibly enabled him to increase his skills). A more

23. This survey is an online questionnaire sent to about 110,000 employees. The questions concern confidence in the future of the group, fulfilment at work, digital tools, collective organisation, *etc.*

qualified technician ('category 2') may be sent to repair the breakdown. Thus, digital planning, which links each intervention with a task, and each task with a given level of intervention, does not enable workers to learn on the job and therefore also reduces the prospects for improving employees' skills.

Digital technology is having a big impact on training, as more and more training is being delivered through e-learning. The trade unionists interviewed note a strong increase in training focused on digital technology. According to INT7, the number of e-learning courses has increased from 20% to 40% in the EDF HR department. At Enedis, there are digital campuses, where employees can train for weeks on end in open access e-learning. For example, training for engineers (who create, replace and modernise networks) is done via e-learning (INT6).

These e-learning courses tend to be criticised by the people interviewed in this study. For instance, according to INT8, they are of poor quality and can lead to errors in technical procedures. There is also a loss of skills at EDF due to the development of e-learning. The number of training courses are reduced, there is very little practical experience and more accidents. Similarly, the participants in FG1 find that e-learning is also of very low quality, seems to be used to reduce costs and to relieve the employer of liability in case of accident.

According to INT9, e-learning courses are often taken outside working hours and therefore extend working hours. In his opinion, they are often not completed. He states that one of the consequences of this is a deterioration in collective skills in non-certified technical areas (e.g. team training).

Finally, for the FG1 participants, it is still possible to develop some skills thanks to the e-learning courses. In their view, the courses seem more helpful for administrative tasks (as in HR) than for technical skills (such as those related to technicians' work on electrical equipment).

Digital technology can also affect training methods and the acquisition of skills through virtual reality (VR). As INT9 points out, EDF has developed an augmented reality headset for new entrants so that they can immerse themselves in the nuclear plant without actually entering it. Augmented reality is also used by current employees for training in certain technical skills (see section 2.1.2.). Thanks to virtual reality, the physical force needed to handle the valves is conveyed to the workers virtually, which makes the training very realistic. This type of augmented reality training should not be used across the board and take the place of face-to-face training. In the interviewee's view, it is essential to maintain physical training for new entrants and employees, because trainers need to analyse the non-verbal elements when assessing trainees. For example, for a technical act in a nuclear island, augmented reality will not convey the smells, noise or water vapours, which will make the action less realistic. Similarly,

because of VR, the trainer will not be able to capture the stress of the employees and their apprehension, as well as monitoring their environment (INT9): *'This training provides know-how but does not provide all the skills. Digitalisation is not everything and the process of acquiring know-how must be based on real practice'*.

According to INT8, there are very few training courses on the mastery of digital tools in the electricity production sector. Yet, these help to reduce the feeling of obsolescence felt by some employees. Instead of training, employees train informally, through 'frictional training' (informal training involving employees who master the tools and others). *'It's a matter of colleagues doing their own thing'*. The results of the DGQS confirm the lack of training in digital tools. Indeed, half of the respondents say that they have not received any specific training on the new digital tools introduced in their company. Only 26% state that they had received specific training. Of those who had received training on digital tools, 32% stated that the training met their needs and 45% feel that it partially met their needs. 20% feel that the training did not really meet their needs (not enough time, resources or a need for further training).

Finally, people interviewed in FG1 point to a loss of in-house skills in the electricity distribution sector, due to a greater use of private providers for technical interventions. Private providers in some regions also seem to experience a lack of skills, with some important difficulties recruiting people with certain technical profiles.

2.1.7 Reconciling work and personal life

Longer working hours are the result of intensified use of e-mails, 'loop' ⁽²⁴⁾ applications that employees want to finish before leaving in the evening, the disappearance of the manager's say on the workload, and the emergence of new tasks ⁽²⁵⁾. This leads to fewer boundaries between the personal and professional lives of employees. INT9 and INT6 confirm this point. The results of the DGQS also confirm these observations, since 57% of respondents answer that digitalisation leads to an increase in working time to the detriment of personal and private time. Furthermore, 58% of respondents consider that when employees telework, it is difficult to differentiate between personal and professional time.

According to INT6, employees find it difficult to disconnect because they get caught up in the applications and no longer see the time passing. According to INT6, some employees have to set alarm clocks to disconnect. Thus, professional life encroaches upon personal life, especially at high hierarchical levels (INT8 and INT6): *'some agents say: 'I go home in the evening, I watch TV but I think about my activity'. Many employees are physically absent and mentally present.*

24. Loop applications combine several applications and create loops that have a beginning and an end.

25. See previous sections.

The higher up the hierarchy you go, the more employees are overwhelmed' (INT6). 'Employees are flooded with emails, and the resulting increase in working time negatively affects the balance between employees' private and personal lives' (INT9).

INT10 is of the view that the individualisation and uberisation of the technician's job isolates workers from their manager. Thus, in order to maintain hierarchical social relations and allow for continuity of communication, 'WhatsApp' groups have been created, reflecting a new mode of operation and management. These WhatsApp groups mean that workers are contacted outside working hours, which can put more pressure on employees' personal lives. According to INT10, *'some employees do not take it well'.*

Finally, according to the results of the DGQS, 62% of employees say they have to be online very regularly to manage and have control of their professional life. In particular, 75% of respondents feel pressure to go online in their free time (of whom more than half explain that this is a personal choice and the other half explain that this pressure comes from their manager and/or colleagues). An overwhelming majority of respondents believe that the right to disconnect is essential in a connected work and social environment.

On the contrary, other interviewees consider that some aspects of digitalisation have also improved the work-life balance. According to INT7 and INT8, telework at EDF allows for a better quality of life and a better balance between work and private life, especially for employees with children.

The results of the DGQS further qualify these views on telework situations. Indeed, 49% of respondents believe that teleworking makes it difficult to combine work and household responsibilities (children, housework or other).

2.1.8 Career prospects and employment security

According to INT9, unequal access to relevant information, caused by the multiplication of optional and online information flows in a context where employees do not have the time to read and sort the information, can have consequences on their career prospects. Access to information enables employees to improve their skills and therefore to develop professionally. He takes the example of employees in the master's college who, in order to move up to the executive college, had to attend training courses and find relevant information. *'The person who masters the knowledge is the one who is most likely to become more competent and therefore to progress in his career. Access to information is access to power. The availability of information, which is optional and online, hinders employees' access to knowledge because they do not have the time or the obligation to seek out this information. Without information, career development is hampered.'* (INT9).

According to INT10, career prospects are influenced by employees' mastery of digital tools. Training in digital tools is therefore essential to enable employees to develop their careers. There can be a vicious circle between digital literacy, access to e-learning and career development.

The influence of digital technology on career prospects is not the same depending on the age of the employees. INT7 considers that the growth in e-learning training courses has not had any influence on employees' career prospects, as the employees who are reluctant to take e-learning courses are older employees who have already climbed the ladder.

Digitalisation can also lead to job losses and undermine job security. Suppliers' invoices have also been digitised: they used to be sent by regular mail by employees a majority of whom had disabilities. This department is now experiencing a reduction in its workforce. EDF's HR department has also suffered a reduction in staff numbers due to the digitalisation of employees' administrative files. The size of the department is being reduced from 1,450 employees in 2009 to 650 by the end of 2022 (INT7).

The negative effect of digitalisation on career prospects and job security is confirmed by the results of the DGQS. According to this survey, 41% of respondents consider that digitalisation has a negative or very negative effect on career prospects and job security. Only 16% answer the opposite and 42% state the effect is neutral.

2.1.9 Workers' rights

The automation of procedures can be detrimental to workers' rights, especially to workers' knowledge of their rights.

INT10 explains, for example, that because of the automation of HR procedures, employees may miss out on benefits, new rights or social benefits to which they could have been entitled. Indeed, the automation of HR procedures (e-applications) implies a reduction in sharing of information through direct contact between employees and the HR department and an increase in written information which, according to INT10, is less well absorbed than oral information.

2.1.10 Conclusions on the sector

In the electricity sector, digitalisation has been underway for the past twenty years.

The launch of the Linky meter, the increase in electricity needs (electromobility, electrification of the economy, smart cities, electricity storage) and the decentralisation of the production system have accelerated this digitalisation process and have given increasing weight to data and its processing. Employees' day-to-day work in the sector has evolved and become digital, in line with the modernisation of electrical systems. In particular:

- *day-to-day work of technicians has considerably evolved with the systemic use of digital work orders and the emergence of Linky real-time meters. The tablet has become their main tool for work, instruction, documentation, data entry and reporting.*
- *In the HR departments, administrative procedures and employee files have been completely digitalised. In the call centre department, employees now work with interactive voice servers.*

All employees in the sector have been equipped with digital media (computers, tablets, telephones) containing an increasing number of business applications. At the same time, emails and instant messaging tools have multiplied, teleworking has been extended and artificial intelligence, virtual reality and robotics have begun to emerge.

As a result, the intensity of work and the pace of work have increased. There is an increase in the pace of work in call centres due to telephone dispatchers and *interactive voice servers*. A higher work rate is also observed in executive and managerial jobs due to the influx of e-mails and the multiplication of business applications. The digitalisation of technicians' work orders leads to a segmentation of tasks and digital planning of activity, with real-time monitoring which can be likened to digital Taylorism or to 'uberisation'. Some time savings are observed in some cases (digitalisation of technicians' work orders, 'hat' applications, digitalisation of employee files in the HR department) but these gains are not being redistributed in any way (monetarily, quality of life at work, rest time).

The nature of tasks has changed. The increasing weight of data, provided through data entry and used to feed business applications, has led to an increase in analytical tasks for certain professions (executives, data scientists, managers, HR). However, this increased data processing also implies an intensification of data entry and administrative tasks for certain professions, particularly for business managers.

Social and hierarchical links have become more tenuous. The digitalisation of HR procedures has greatly distanced employees from the HR department and from other departments by reducing communication and internal relations. The individualisation of the daily work of technicians, made possible by digital work orders and live site management, also leads to a reduction in informal exchanges between employees in a context of uberisation of the profession. In addition, the influx of emails and instantaneous discussion tools reduces direct interaction between employees. In particular, the increased use of email has weakened hierarchical links insofar as requests for internal work are made by email rather than by the manager, thus erasing the managerial filter on the workload.

The effect of digitalisation on autonomy is ambiguous. For instance, the digitalisation of technicians' work orders may have a negative effect (each task is reserved for an employee with the required skills, depending on his or her technical level; so the employee's ability to learn on the job and to be autonomous in a situation of 'higher level' of intervention is reduced) while triggering also positive effects (all documentation is available on the tablet, enabling the employee to consult it for the task himself without making a call to a colleague, which can have a positive effect on his autonomy).

Digitalisation strengthens management's control over work. For technicians, Linky meters in real time and the real-time recording of data relating to the intervention allow regular monitoring of the technicians' work. For call centre employees, surveillance is also in real time. Teams-type tools also allow monitoring.

Working time is also affected, and has been increased for some employees, because of the inflow of emails, because of the structure of business applications and because of the weakening of managerial filters, thus increasing the workload.

The effects of digitalisation on physical health are moderate. They can be positive (fewer accidents in the HR department, virtual reality) or negative (posture, poor quality e-learning training on technical skills and an increase in accidents).

There are many negative effects on mental health: an increase in psycho-social risks for reception staff (stress, performance requirements, reduction in break times), for HR staff (isolation), for technicians (isolation, task segmentation and real-time monitoring) and for managers (inability to disconnect, incessant interruption and influx of emails).

Digitalisation has led to strong development of e-learning courses, which are often considered to be of poor quality by the interviewees. These courses are often taken outside working hours or not taken at all, which, together with their poor quality, leads to a loss of collective competence.

Finally, longer working hours and increased workloads lead to less separation between personal and professional life, especially for executives and managers.

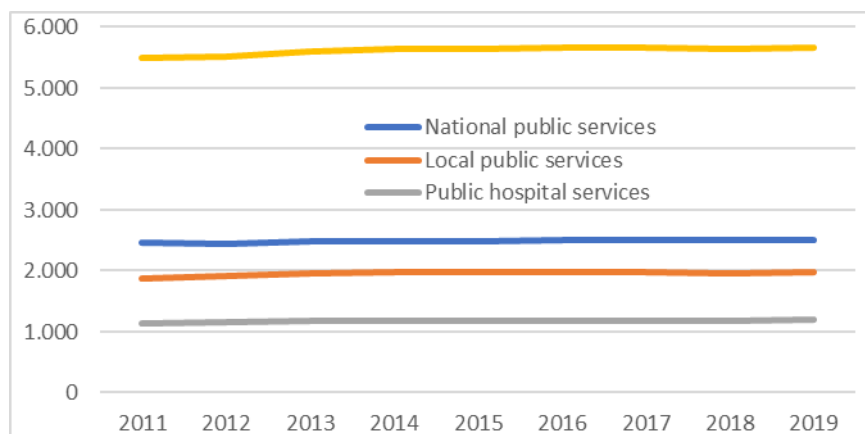
Section 2.2 Public administration sector

2.2.1 Overview of the sector

In France, the 'Public administration' is made up of national (or State) public services, local public services (or regional authorities), and public hospital services. The public hospitals will be discussed in the 'hospital sector' section. In this part, we consider only the 'public administration' in the sense of national and local administration.

The total number of jobs in the public administration amounted to 5.66 million in 2019 (4.47 million if we do not count the public hospital services). This represents around 21.2% of total employment in France for that year. Employment in the public administration has slightly increased over the last 10 years with an additional 171,000 jobs, representing a + 3.1% growth over 2011-2019 (Graph 3). This reflects a decrease in the number of civil servants (and of state-aided contracts) and the well-documented increase in the number of contractual agents (see Table 2).

Graph 3. Employment volume in the public administration (2011-2019)



Source: Insee SIASP (Système d'information sur les agents des services publics).

Table 2: Evolution of employment structure in the public administration (2011-2019)

Fonction publique	2011					2019				
	Public servants (incl. Military)	Contract agents	State-aided contracts	other status	All	Public servants (incl. Military)	Contract agents	State-aided contracts	other status	All
National public services	75,8%	14,8%	2,0%	7,3%	2 466,2	73,8%	18,8%	0,6%	6,9%	2 506,9
Local public services	74,9%	19,1%	2,7%	3,3%	1 881,8	74,6%	20,7%	1,7%	3,0%	1 968,0
Public hospital services	72,0%	16,9%	1,4%	9,7%	1 145,2	68,1%	20,8%	0,4%	10,6%	1 189,5
All public administration	74,7%	16,7%	2,1%	6,4%	5 493,2	72,9%	19,9%	0,9%	6,3%	5 664,4

Source: Insee SIASP (Système d'information sur les agents des services publics)

2.2.2 History and patterns of digitalisation in the sector

Since the late 2000s, digital transformation has been implemented in the public administration through different State-level reforms (digital being only one part of a more global strategy). These were the Révision Générale des services publiques (RGPP, or General Revision of the Public Services), Modernisation de l'action publique (MAP, or Public policy modernisation), and the Action publique 2022 (2022 Public policy) programme ⁽²⁶⁾, to promote digitalisation of the public services, transformation of the State information system and an emerging 'Platform State' ⁽²⁷⁾ (ENA, 2019). In these approaches, online information, online services and user-participation are seen as a series of 'steps', and various plans are implemented to modernise and enhance the digitalisation of the administration. Commonly, digitalisation of the public administration may take different forms: online services (including administrative forms) and information to the public, interconnection between public services or departments, shared (intranet) platforms for the staff, (more intense use of) computers/tablets/smartphones, teleworking and videoconferencing, etc. In particular:

- The most common 250 administrative procedures must be digitalised by May 2022.
- Since 2016, *FranceConnect* has been deployed. This tool allows the public to use a unique identifier which connects them to different central and regional administration services as well as other public services (taxes, municipalities, national health insurance, etc.).
- A future 'official's digital backpack' is being designed, which aims to provide public officials with easy means to work remotely, notably through videoconferencing and instant messaging solutions.

26. With differences in measures and implementation, these three civil service reforms pursue similar objectives: to improve the quality of services, modernise the civil service, and contain government spending.

27. As underlined by Jeannot (2020), this concept of the 'Platform State' (« *Etat Plateforme* ») is inspired by O'Reilly (2011), who conceptualized 'Governance as a Platform': the State's open data and applications enable possible innovations brought by private persons or institutions, which could benefit the economy and the country's modernisation.

Existing data show that France performs better than the EU average in terms of digital public services, but worse in terms of connectivity/integration of digital technology (see section 1.2.1).

According to government sources, three-quarters of the relationships between the French population and the public institutions now take place digitally. Also, nearly one out of every two French citizens use the '*FranceConnect*' unique identifier on digital public services. As underlined before, €500 million from the French Recovery Plan are to be allocated to public digital transformation. During the COVID-19 pandemic, some specialised taskforces from the digital Inter-Ministry directorate (*Dinum*) advised the State IT services, to encourage technical and organisational changes regarding digitalisation in the ministries.

According to the interviews and the focus group FG3, many technologies/digital approaches can be seen in the public administration, including: emails ⁽²⁸⁾, business applications, teleworking, videoconferencing tools, online training, remote connection (access), user-web side/agent-web side for administrative formalities, development of big data, digital spy devices, limited-access (for staff and users) 'social' networks, internal networks (for the officials), 'chat' tools for officials and users, *etc.*

The DIGIQU@LPUB web survey (DGQS) confirms intensive use of mobile devices and communication tools (for ca. 88% of respondents). Typically, 93% of respondents from the public administration sector use digital devices to communicate with colleagues while 80% use them to plan the performance of their tasks. Similarly, all respondents use e-mails and 79% of respondents use web-based applications to exchange with their network of work partners. It is to be noted that 57% of respondents consider that digitalisation is good for the public administration service in general (41% see it as beneficial for society).

The DGQS also confirms the high percentage of teleworkers in the sector (75% of respondents work at least partially at home, and 72% work remotely from another place). The average number of days of teleworking in the week is limited, as 81% of respondents telework only 1 or 2 days a week.

The DGQS also confirms a tendency for digital tools and methods to trigger monitoring of employees, according to 51% of respondents (only 10% disagree with this statement).

28. For instance, one participant in the focus group (FG3) explains that his department's email inbox '*explodes every day*'. Another one considers that '*it is not possible to respond to all emails*' and that some sorting is necessary, with also a lot of waste which means that only one-third 'are'/'can be' answered.

The pandemic triggered rapid acceleration in the digitalisation of the public administration. In particular, the periods of lockdown underlined the importance of the 'service continuity principle' in the public sector and a large number of civil servants had to telework, with a surge of teleworking in 2020 and 2021 compared to 2019 (Cour des comptes, 2022). In January 2022, the Minister of transformation and public service estimated the number of State civil servants who can telework at 400,000 to 500,000 (*France info* radio, 9 January 2022). The participants in the focus group (FG3) explained that teleworking was not very widespread before the pandemic, and the management/administration was usually not very willing to grant teleworking to workers ⁽²⁹⁾. Yet the administration (directorate) seems to have changed their opinion on teleworking, *notably* for potential gains in terms of office space. INT1 also confirms that from teleconferencing with phones to videoconference solutions, the pandemic has enabled a major surge in digitalisation and a change of perception on certain tools (like teleworking) for many stakeholders (notably trade unions).

INT2 also considers the pandemic as a booster for technologies and digital tools (videoconference rooms, team 'zoom' accounts, tools like Teams in Outlook, switching of professional phone numbers on personal phones, *etc.*) which were previously rarely used and not on this scale: '*COVID has entailed an acceleration of ongoing transformations, changing the ways in which workers interact*' (INT2). INT3 adds that a number of tools monitoring working tools and officials' activity, as well as booking systems for rooms and vehicles, have become more widely used since the start of that period. In contrast, INT5 reports that in her authority, the pandemic did not have any boosting effect, as teleworking had been implemented just before (1.5 months before!). This ensured continuity in the payment of unemployment benefits by the public employment service.

2.2.3 Work organisation

Batac and Maurel (2020) underline that in local public administration, digitalisation theoretically generates productivity gains (reduction of workers' workload, automation of some tasks, end of routine tasks such as manual entry), reduces costs and improves the quality of the services. But digitalisation can also bring new constraints and hidden costs: the need for training, investment in IT devices and hardware, uneven access to digital tools depending on age or location.

Beuve et al. (2021) stress that digitalisation allows considerable time saving in existing processes, targeting the services offered, making it possible to spend more time on specific cases

29. Some participants in the focus group explain that for certain positions/services, some mobile working took place before the pandemic, for a few days a week. Another worker underlines that '*The administration has always been, since a very long time, very hostile to teleworking, there is a culture of presenteeism and they consider that it is important that the head of department can see the staff members*'.

or on other tasks. The authors also consider that 'operating in silos' (working without connection to other services) is an obstacle to the development of new digital public services, which require collaborative working methods, contrary to a way of working which is normally very much based on routine tasks. Ginibrière (2021) underlines some important organisational and coordination challenges that accompany increased digitalisation in order to allow digital acculturation: in particular, digitalisation appears to develop in local and regional authorities in a non-coordinated way: operating in silos is common due to an absence of digital culture.

In a nutshell, in everyday work, the interviewees emphasize the improved flow of information, but also more intense work (and sometimes increased workload), often more surveillance and monitoring, less autonomy and finally (often) more stress. There also is no evidence that digitalisation improves the quality of the work done for the end user.

For instance, INT1 considers that while digitalisation reduces the routine part of the work in the sector, it is normally not followed by more 'quality work'. This is because digitalisation is combined with an increase in other tasks given to public officials, and the gains do not result in time spent on other services or additional attention to public service users (more human presence in general, more attention and more time dedicated to certain groups): *'with the same number of civil servants and digitalisation, there could be more human presence'* (INT1). On the contrary, the time spent by an official on each user is monitored in some services. The same interviewee underlines that while digitalisation (and in particular teleworking) should enhance workers' autonomy, it often results in more surveillance at the workplace. According to some interviewees, this is due to the administration's lack of trust in its employees (see *infra*).

For INT2, enhanced fluidity brings also increased complexity, with more reporting, less autonomy, and more surveillance: *'digitalisation renders things [work] on the surface fluid and easy, which adds an extra burden in terms of the quantity of work to be done'*. He observes that routine-type tasks are also increasing in some local administrations, as for example in the Plaine Commune agglomeration: *'some reporting, some spreadsheets, some gizmos, some thingies, some pie charts, that is infantilisation'* (INT2). The overall number of processes are increasing, and the hierarchy is being reinforced.

Digitalisation may also result in a decline in empowerment/autonomy in general terms, while information overload (large numbers of emails, *etc.*) may bring a lot of stress to the officials (INT3). As reported by another interviewee, digitalisation has increased work intensity, with a decline in human interaction: *'everything which is not work on the computer is considered as a waste of time'* (INT4).

The content of work has also been very much changed by digitalisation. INT4 explains that the development of 'data entry clerk' platforms has reduced the autonomy and the quality of work of the officials concerned, with a significant rise in their routine activities. The increase of routine-type work has also been generated by problems in the existing digital software/applications which often require double or triple entry (lack of interoperability of the systems/applications, problem with the data flow, etc.).

INT4 also notes a dehumanisation of administrative procedures which does not allow 'space' or autonomy to agents. Digitalisation may bring some time gains but also encourages *'false performance'* (i.e. a performance only in appearance). Indeed, the insistence on the productivity made possible/accelerated by digital tools and applications has for instance reduced the work quality and limited the scope of intervention of the official: *'your neighbour [colleague] has maybe produced more titles [ID cards, etc.] than you, but he has not learnt anything'*.

INT5, from a different administration, describes a different situation regarding the intensity of work. Work intensity has not really changed in the public employment service (PES), as a balance has been struck between the need 'to do more tasks to obtain the information', and the speed in obtaining the desired information. Yet, she also points to a sharp increase in the routine nature of tasks for officials from different services. This is in particular due to the number and the nature of the (business) digital applications, with agents having to fill in many applications (that do not communicate with each other), or, in some applications, data linked to information or discussions raised on a specific device for communicating with users (unemployed people), which is time-consuming. In the PES, digitalisation has not caused any issues with autonomy, as this seems to depend, at least in certain agencies, on the choices of the staff member: *'at Pôle Emploi, if you wants to have autonomy, you can have it'* (INT5).

The focus group (FG3) has highlighted a change in the content of work due to digitalisation: many routine and repetitive tasks which were previously performed have disappeared, while other ones have appeared. There does not seem to be any consensus among the focus group members on the impact of digitalisation on the quality of service provided to the users: on the one hand, the administration is better able to respond to the needs of some users and may reach a greater audience, while on the other hand, direct contacts (e.g. now only by phone) with the users are scarce, and difficult for users to achieve (the wait is rather long on the phone). Furthermore, with the underlying productivity goals in the daily work, the potential time devoted to users has been reduced. Yet, for the workers in the administration themselves, one interesting opinion heard was that the tasks performed have moved towards more *reflective* skills, hence many posts in the administration have potentially become more interesting.

The workers in the focus group also underline that monitoring of the work by the manager has increased. It has been rendered very easy by the digital tools, which include a tracking device (this device records all operations implemented by the worker and can be accessed by the manager).

Around 50% of the respondents to the DGQS consider that digitalisation does not improve the quality of the service provided to users (35% think the opposite). 52%, however, report that it has improved their job quality, and 4% of respondents also consider that digitalisation has improved their productivity: this suggests a complex relationship between job quality and quality of the public service, in which productivity is not necessarily linked to better public service.

Yet, digitalisation seems to improve some particular aspects of work quality/organisation for many: improved interaction with public service users (for 39% of respondents) ⁽³⁰⁾, more autonomy to schedule or organise work tasks (for 48% and 50%), improved coordination with colleagues (50%) ⁽³¹⁾. Also, these trends do not seem to change the workers' feeling of usefulness vis-a-vis users, or the quality of the relationship with them: this may partly be explained by the overall choice in the sector to transfer productivity gains into job cuts, since the DGQS also informs us that digitalisation has triggered increased pace of work/work intensity, for 53% of respondents.

Finally, many interviewees agree on a widespread problem of 'trust' in the public administration: *'Digitalisation should normally enhance workers' autonomy, but often it has triggered more control, because of a lack of trust from the employer'* (INT1); *'In the local and regional administration, the trust relationship is particular [sic] »* (INT2). Civil service managers are concerned whether teleworkers are truly involved in their work, *'which underlines an obvious lack of trust... and which induces stress for them'*(INT4).

2.2.4 Working time

In the absence of safeguards, teleworking, IT tools, online internal resources, *etc.* may encourage increased working time and a feeling of greater work intensity. Yet it is important to note the substantial differences in the actual working time, for instance depending on the administration observed, or its type of (local) management.

30. Also, this should be seen together with other findings of the DGQS: 46% of respondents do not feel more useful (providing a better service) to users and 52% consider that the relationship with users has not changed since the introduction of digitalisation.

31. Similarly, 39% of the respondents consider that they exchange and collaborate better with other services and departments.

For instance, INT1 underlines that telework increases work intensity, notably because some managers consider it is possible to make teleworkers work more: *'While teleworking should bring quality, it renders work more intense'* (INT1). The surging workload for teleworkers is such that in *some* administrations, some employees decide to give up this mode of work after a period of time: *'in all administrations, there is a tendency to give more work to people who are teleworking'*. INT1 also notes that digitalisation in some cases allows *'personal modulation'* in the work organisation: for instance, some employees in the administration work more on certain days (*i.e.* they work during normally non-working hours), and less some other days.

In some administrations and for certain officials, the 'potential' working time slots have been extended, with the inclusion of mandatory time slots. In the case of the Plaine Commune administration, working hours have to be within certain slots ⁽³²⁾ for the workers without particular constraints, due to their position in this local administration (INT2). These work schedules were negotiated at the same time as the teleworking management system, which allows workers to clock in/clock out. A debit-credit system ensures that over a certain period, the statutory working time is respected, which limits overtime hours. Clearly, in this administration, teleworking has enabled high (chosen) flexibility in daily work organisation (example: a worker can take his children to school, re-log onto his computer after, *etc.*). For the people who save a lot of transport time, this work system *'has changed people's lives'* (INT2).

INT4 reports that working time is skyrocketing in some administrations, boosted by teleworking, especially in certain ministries. Yet, INT4 recognises that there the situation varies considerably depending on the administration or the worker's position. For instance, data entry clerks do not suffer excessive working time, unlike officials working in services linked to some ministerial offices, for instance: *'in terms of working time, there is a boom at the managers' level, notably with teleworking, from 6 in the morning to 2 in the morning at the Ministry of internal affairs (...) in some ministries, a manager who does not demonstrate that he does not stay working until 8 or 9 pm, is not considered as serious.'* (INT4) These observations must also be tempered by the improved well-being and time gains for those officials who save a lot of transport time (which may amount to three hours for certain employees in the administration).

According to INT5, teleworking (possibly a few times per week in the PES) saves a significant amount of time while, for many officials, digitalisation has not increased total effective working hours. There is a probable exception for managers, as many of them are used to excessive working hours, due in particular to *'the increased number of reports they have to make'*.

32. Officials must carry out their work within the following slot: 7:30 am – 7:00 pm, with a 45 mn break, with mandatory presence in some specific slots (9:45 am – 11:45 am; 2 pm – 4:15 pm).

The participants in the sectoral focus group (FG3) confirm that work outside regular working hours is fostered by the new digital tools in their administration (Directorate general for public finances), while only a limited number of overtime hours are taken into account for compensatory rest/compensation.

The results of the DGQS seem to confirm that digitalisation has differing impacts on the working time of officials in the public administration. About two-thirds of respondents report that it has not impacted '*unpaid overtime hours*', yet around one-third consider it has increased these unpaid hours. Also, while 52% consider that digitalisation has not increased '*unsocial*' (evenings nights/week-end) working time, 45% think it has.

2.2.5 Health and safety and outcomes for workers

Reduced cohesiveness of group work, physical or mental stress due to increased intensity at work, loss of quality work, absence of human presence, non-adapted professional equipment: many features displayed or enhanced by digitalisation exhibit significant occupational health and safety (OHS) risks in the public administration sector.

INT1 underlines that digitalisation, through more teleworking, or more digital and less face-to-face communication, reduces the cohesion of work teams and the quality of the relationship with users: loss of markers, loss of the feeling of belonging. Some also mentioned guilt-tripping of officials, who have to face unattainable targets, insufficient support with digital equipment and teleworking, and a lack of recognition of the work done. INT1 is very specific in saying that in terms of physical health, burnout is not limited to the private sector but also exists in the civil service. Trade unions have also identified a risk of musculoskeletal conditions, particularly for teleworkers.

For INT2, the experience of teleworking at the Plaine Commune administration is very positive as it restricts actual working hours and is more restful for many officials, as well as involving high satisfaction with the device. During their teleworking days, civil servants also work in a more peaceful environment, are less often disturbed by the phone and can more easily concentrate on their job.

INT4 underlines that if the digital tool used at work are mastered, everything is good. But if digital tools malfunction (as frequently happens), this may result in psychological exhaustion for the worker because his work is regularly '*hindered*', especially if the worker is isolated and there is no human support to help solve the problem (which is quite often the case according to the interviewee). Also, the office and IT equipment are not necessarily suitable and of high quality, so may cause physical problems (example: bad quality chairs or computer screens). Finally, INT4 remarks that since the COVID-19 crisis and the first lockdown, some officials are suffering '*cabin*

fever' (*'syndrome de la cabane'*), with a fear of social interactions and of going outside after the sanitary crisis.

INT5 considers that, at least in her agency, digitalisation has, in general, had no impact on OHS. However, she also points out that the first lockdown period caused physical discomfort for many (involuntary) teleworkers, as their internet connection or ergonomic conditions were quite bad.

Some workers from the focus group (FG3) recall that with the COVID-19 pandemic, the psychosocial risks '*exploded*' in the administration. They have more recently returned to a lower level but have still stayed more prevalent than before the pandemic.

Results from the web survey (DGQS) for the public administration also underline that the OHS risks should not be underestimated, even in a sector with a large share of 'office work'. Indeed, while 40% of respondents agree that working conditions have improved (³³), 38% disagree.

Furthermore, 55% of respondents to the survey consider that they have a physical condition which has been caused or aggravated by the introduction of digital tools and methods at work, while only 9% answer that it has improved their physical health. Those describing physical effects of digitalisation speak of a large number of problems: vision problems (for 58% of them) back pain (51%), neck pain (49%), headaches/head pains (39%), physical fatigue (29%), hand pain (29%).

39% of respondents in the sector feel that digitalisation has caused or aggravated psychological problems, and only 3% consider it has helped them to deal with a pre-existing psychological condition. Mental fatigue (for 76%), stress (for 66%), and anxiety (33%) are the most common mental conditions reported by the respondents.

In terms of how employers have responded to increased digitalisation, the respondents mainly highlight the ability to work from home/telework (introduction/extension) (52%). The other two following actions come next (³⁴): (i) A charter/manual of good practices has been drawn up at the workplace regarding digital tasks (24% of respondents), (ii) improvements have been made to the physical environment at the workplace (21%).

2.2.6 Skills and learning

Generally speaking, interviewees recognise the importance of upgrading the digital skills of the public administration staff, while also providing good training and information on digital devices

33. In addition, 45% of respondents recognise an improvement of personal well-being at work.

34. Note: Each respondent could give more than one answer.

(and teleworking in particular). A recent survey (PIX, *Les Interconnectées* and *Syntec numérique*, 2021) illustrates the low global level of digital skills in the territorial public administration (regions, agglomerations, cities...). It estimates that two-thirds of the employees do not have a sufficient mastery of digital skills and one-quarter are in great difficulty. Furthermore, the less qualified and older workers are also those with lower digital skills: only 23% of 'category three' officials exhibit an 'autonomous' digital level compared with 46% of the 'category one' staff. Similarly, only 17% of workers aged more than 55 years old display an 'autonomous' digital level, while 56% of 34-55 years old workers have this level of skills.

The existence of high training needs in the administration is confirmed by many interviewees. For instance, there is a generally acknowledged need for upgrading of software/hardware skills, together with a need to develop social/soft skills (*e.g.* organise one's daily work in contained slots, respect break times). The use of digital tools gives access to new skills, specific or general, but it is never recognised or rewarded in the administration. Hence, INT2 underlines an important need for upskilling of the officials working in the agglomeration (Plaine Commune), especially digital skills. Yet, some significant problems may hamper such upgrading of skills: (i) many officials are not aware of the importance of training (some have a very low education level), (ii) the employer is not willing to reward skills and training through additional salary. The employer has no long-term vision on this important subject, according to INT2.

INT4 notes two important problems related to training in the administration: (i) the workload is generally too high to allow time for training, and (ii) officials' skills are often underused or not recognised, which in turn does not encourage them to participate in training. But generally, the administration does not take time to consider how to make better use of officials' skills to enhance the quality of the work teams and make them feel better: '*this is not in the spirit of the times (...) this is not something expected from the staff*' (INT4). The heavy reliance on contract workers and individual contractors also impacts the work collectives and limits the integration of these workers and their skills.

The training needs of the officials in her administration (PES) are well taken care of. Indeed, for many years now, all agents of the PES attend 4 days of training during the year (all agencies are closed for a whole day): 'in the morning, the new [digital] tools are presented, and in the afternoon, agents may practice on these new tools' (INT5).

The DGQS confirms that new digital skills usually had to be acquired by staff, yet employers are not very involved in helping with the upgrading of skills in response to digitalisation: 73% of the respondents consider that training was needed to accompany the introduction of digital tools and processes. 47% of respondents reported that no formal training was provided by the employer but 37% said some informal learning took place at work. 40% of respondents were offered

training by their employer. For those concerned, 75% of respondents consider that the training meets their needs.

2.2.7 Reconciling work and personal life

Digital tools and telework are factors in work overload and can help to blur the boundary between personal and professional life. This can accentuate the 'over-work' phenomenon (*i.e.* outside regular working time, people think about their work or are not totally cut off from their work duties). But teleworking also brings time gains for many workers in the administration due to saved transport time.

INT1 underlines that the possibility of teleworking allowed by the 2021 *Framework agreement on teleworking in the public sector* (see section 3.4.2 for a presentation of this collective agreement), contributes to a better life balance by enabling officials to avoid carrying out family-related tasks if they are at home. This agreement also contains two other provisions relative to private life: on the right to disconnect (see *supra*), and on the prevention of domestic violence: '*Undoubtedly, as we already described in this section, teleworking has brought considerable flexibility, benefiting workers' well-being in Plaine Commune, and has also enabled many workers to save a lot of transport time*' (INT2). INT4 presents a mixed opinion on the impact of digitalisation on the balance between professional and personal life: while she recognises important gains of transport time for teleworkers, she also warns of a dwindling separation between professional and personal life due to digital tools and teleworking. Another interviewee considers that in her administration, there are quite a few safeguards to protect the separation between private life and professional life: warnings through pop-up windows on the computer if an official receives or sends emails at weekends or on public holidays, support for teleworking and digital tools (online guides, guidelines), a QWL (Quality of working life) assessment twice a year (INT5).

Some participants in the focus group (FG3) underline the contribution of teleworking to balancing work and home life. For instance, one worker explains that he saves a lot of transport time with his two days of teleworking, and another one explains that this work organisation allows some flexibility in his daily work, with the possibility to adjust his work schedule to personal/family commitments during the daytime.

Respondents to the DGQS offer very mixed opinions on the effect of digitalisation on the work-life balance: 36% of respondents consider that a better balance is obtained, while 39% disagree⁽³⁵⁾. The reduction in transport time during the week has contributed to the positive opinion of the first group (51% of respondents indeed consider that commuting time from home to

35. Similarly, 34% of respondents feel they can combine professional and personal life.

workplace has decreased). However, only 21% of respondents consider that digitalisation has increased their personal/family time while half of respondents disagree! And 40% of respondents think that digitalisation has not affected the amount of time they have outside of work. 44% consider that it has increased their work time *'at the expense of their personal time'*, while 43% consider that *'when teleworking from home it is difficult to clearly differentiate between their working time and their personal time'*.

2.2.8 Career prospects and employment security

A large share of jobs in the local, regional and national administration (administrative work, paper-work, forms, *etc.*) are very vulnerable to the risk of replacement by digital tools. A study by CNFPT (2021) ⁽³⁶⁾ shows that nearly a third of the jobs in the regional ('territorial') administration could be strongly impacted by the digital transition, due in particular to automation and to the progressive disappearance of paper. The main factors behind this transformation are the deployment of new technologies, the arrival of new ways of organising work (telecommuting, collaborative tools), new regulatory obligations and the transformation of the relationship with users (digitalisation of procedures). All 241 jobs listed in the local/regional public sector are affected by the digital transition, but CNFPT stresses that three categories of jobs require special attention: *(i) vulnerable jobs, those most directly affected* (42 jobs out of 241, including: public procurement managers, social reception officers, town hall secretaries); *(ii) jobs threatened with a reduction in the number of employees* due to the automation of processes, the development of digital one-stop shops, and the disappearance of paper (33 occupations could see their workforce shrink in the next 10-15 years: registrars, laboratory technicians, HR managers, receptionists, administrative management assistants); *(iii) 20 professions with a larger number of employees, representing 1 million officials* (more than half of all staff in the local/regional administration) will be less affected by digital technology, but the number of jobs concerned suggests that developments affecting them should be closely monitored: administrative management assistants, receptionists and cleaning personnel. Some of these jobs also belong to the *'sensitive jobs'* and to the *'jobs threatened by a decline in the number of employees'* categories and should therefore be monitored very closely.

The interviewees provide different perspectives on the job prospects in the public administration, according to their specific scope/experience. For instance, one participant in the focus group (FG3) underlines that the head of the administration has always justified cuts in the workforce by referring to increased digitalisation ⁽³⁷⁾. INT1 considers that the reduction in the number of civil

36. Centre National de la Fonction Publique Territoriale.

37. Furthermore, this worker recalls that in his own administration (the Directorate general for public finances), a previous director had acknowledged that the reduction in the workforce had been higher than the productivity gains.

servants⁽³⁸⁾ is not directly caused by digitalisation but is the result of a choice by government. He considers that for trade unionists, adaptability is inherent to the civil service, and it is normal that jobs should change with digitalisation, but one serious concern is that civil service reforms are never discussed with the civil servants/officials or their representatives. INT2 explains that some developments are clear-cut, as new workers in the local/regional administration are now mainly recruited on temporary contracts, which means less continuity in staffing. In addition, there has been a reduction in the staffing of support functions: for instance, secretaries are less needed than before, notably because some tasks previously performed by them can now be automated and/or performed by software applications. INT4 states that the administration is relatively protected from the negative effects of digitalisation on employment, but notes that all technical professions are potentially impacted, with new re-skilling requirements. In addition, she underlines that the 'first level' low skilled workers who were in charge of preparing and booking meeting rooms, also do tasks that may be outsourced (to external companies or digital applications). INT4 also states that data entry clerks who work on administrative platforms are the equivalent of '*a new proletariat*', with very few career or professional development prospects.

INT5 does not observe any impact of digitalisation on employment in the PES. Yet she also considers that this could change in the medium or long-term: *(i)* officials who retire may not be replaced, *and/or* *(ii)* large platforms specialised (in a certain type of job seekers) may be developed (to the detriment of 'local' Pôle Emploi agencies).

The DGQS shows mixed levels of concern about career prospects and job security. 45% of respondents consider that digitalisation has not improved '*job security and future prospects*' while only 15% think the opposite. And while 25% of respondents see their job as '*more interesting and attractive*', 36% think the exact opposite.

2.2.9 Workers' rights

The ability of trade unions to share and spread information among members and workers in general is often questioned by the interviewees with regard to the new ways of working.

For now, INT1 does not perceive any impact of digitalisation on workers' rights. Yet he underlines that sharing union information with a large share of teleworkers is becoming difficult: the trade unions try to organise meetings when people are physically present, to make sure the information gets across.

38. Obtained by non-replacement of people who leave for retirement, as it is normally not possible for civil servants to lose their jobs (except for incompetence).

In terms of trade union activity, INT2 reports that it is often difficult to organise face-to-face meetings (hybrid meetings are common now, because many people prefer videoconferences). He also considers that the stakes are high for the trade unions, because the question for them is how they can use digital tools for social dialogue and to bring a new population into trade unionism (*'digital tools are great tools to catch supporters'*), with a large *'issue of representativity'*.

INT4 feels that it is more difficult to represent groups of workers in the administration because of the rapidly changing perimeters, which can be triggered by digitalisation. But she mainly warns of the reorganisation of the equivalent bodies to works councils (the *Technical committees*) in the civil service. This reorganisation has enlarged the competencies of the councils and could make it more difficult for them to defend staff; this is a serious matter, as trade unions and workers' representatives in the works councils are the right people to discuss and warn of the effects of digital tools at the workplace (*i.e.* at a micro-level). INT4 also considers that it is difficult to recruit new members to the trade unions because many officials view trade unions as 'service providers', while younger ones are not willing to join a union.

INT5 also points out how difficult it is to exercise her rights as a union representative, to lead local inspections and interview officials: now, when she spends some time in an agency, she is confronted with *'desertion of the personnel: whole corridors, whole floors, [are] empty'*; as many as half the workforce can be absent (in a given PES agency). She explains that it is now more complicated to discuss issues at the Union level; as a consequence, a questionnaire has been distributed in order to get more feedback. Her trade union has also lost some members since the start of the COVID-19 period.

Otherwise, in terms of other types of workers' rights: the 'right to disconnect' for teleworkers in the public administration sector is enshrined in the *2021 Framework agreement on teleworking* in the public service (see section 3.4.). Some services or ministries have promoted internal regulations to make them effective in their area.

In the Plaine Commune administration, the right to disconnect is clearly effective according to INT2, as overtime hours may be taken account of (through a debit-credit system, see *supra*). The interviewee, however, also stresses that the enhanced control brought by digital tools is also a serious matter (*i.e.* potential continuous monitoring is possible during working hours).

INT4 considers that the right to disconnect appears in a *'very beautiful Charter of the administration'*, but is not well respected, because in many administrations and at many levels, it is very difficult to exercise this right, especially for managers (who may then have a poor assessment or be lectured at!). In contrast, the right to disconnect is plainly recognised at Pôle

Emploi (PES) according to INT5, as underlined by the 'warning' windows which pop up if the worker connects outside normal hours. Yet, whether the managers themselves fully exercise their right is largely more questionable.

The workers contributing to the focus group (FG3) explain that while disconnecting from the computer/laptop/emails is easy outside regular working hours, it is harder to do so effectively because of the various chat applications (from which you receive messages directly on your mobile phone). One worker states that *'you are not to blame when you don't answer an e-mail at 8 p.m.'*, while the administration has no specific policy ensuring the right to disconnect.

According to the DGQS, digitalisation in the workplace has created some pressure to *'log in' remotely and check (...) work progress (...)* for around two-thirds of respondents. Yet, for the majority of these respondents, this is a personal choice (not coming from their employer, supervisor or colleagues). Similarly, 52% of respondents consider they need to be online very regularly to manage/control their professional life (only 18% disagree): in this context, the effectiveness of the right to disconnect seems up for question in a large proportion of the administration, given the following trends:

- Only 11% of respondents say that their employer has set rules on disconnection;
- Only 10% say that the statutory disconnection rules in the labour law are applied to them;
- Only 3% say that workplace networkers/servers are disconnected outside working hours;
- Around 2% say that managers set an example in terms of information management and disconnection.

In addition, fewer than one quarter of respondents report that information and consultation procedures have taken place regarding different aspects of the planning/designing of digitalisation and work processes and tools, while more than half of respondents do not know if such procedures had taken place: this could suggest that such procedures are not well publicised, but mostly ⁽³⁹⁾ reflects a significant lack of such procedures in the sector, due to the absence of a legal obligation attached to 'digital' aspects.

39. Indeed, a large share of the respondents should be well informed about these topics, given their involvement (at different levels) in trade unionism: 56% of them are members of a trade union, 27% represent their trade union in the workplace, and 19% participate in trade union structures outside the workplace (note: it was possible to give several answers to this question, so the percentages should not be added up).

2.2.10 Conclusions on the sector

For the last 10-15 years, digitalisation has significantly increased in the public sector, taking a large number of forms, of which teleworking and digitalisation of the services to users are among the most common.

The work content has evolved with digitalisation: in many places, (local) support functions are disappearing, 'administrative platforms' are increasing. While digitalisation tends to reduce the share of routine tasks, there is no evidence that it necessarily brings more quality 'work' for the employees (indeed, it is associated with a greater workload).

The right to disconnect seems hardly effective for all officials, and there is mixed evidence on the work-life balance.

The impact of digitalisation is found to differ between institutions. On working time, there is rather mixed evidence concerning the balance between personal and professional life, and compliance or otherwise with the (French) 'right to disconnect'. Examples are a local community with a teleworking agreement with safeguards [no additional hours] compared to some State services [with their 'culture of working late' and a greater workload thanks to ICT]. Regarding **physical/mental health**, in certain conditions, positive effects of teleworking can be observed (rest, flexible time management) while in some other circumstances, the negative effects seem greater (isolation, less team feeling). Mental health can also be an issue in departments/services where unattainable work objectives are assigned to the workers. The same is true for some new services in the public administration which are emerging with the acceleration of digitalisation (e.g. the new 'administrative platforms').

A frequent trend towards work intensification is also observed, with an increase in the inflow of work (the workers 'absorb' more work due to the fluidity allowed by digitalisation) Even if productivity is high, it does not necessarily mean a better service to users.

Globally, digitalisation is a **challenge for work collectives** which have to adapt (remote work and risk of isolation, difficulties for management, different modes of interaction).

There also seems to be a cost problem regarding digitalisation in the public sector, with various issues emerging (consulting firms having more than their 'share of the pie', sometimes a problem with the quality of IT equipment for staff, systematic involvement of the private sector is also never usually challenged).

Finally, there seems to be a widespread ‘problem of trust’ in the public administration: this combined with digitalisation creates adverse consequences (monitoring of agents, telework limitations in local agreements, etc.).

Section 2.3 Hospital sector

2.3.1 Overview of the sector

All information in this section is taken from DREES (2022).

At the end of 2020, the French hospital sector consisted of 2,989 health establishments with full hospitalisation capacity (counted in beds) or partial hospitalisation capacity (*i.e.* without overnight stays, counted in places). The public sector comprises 1,347 establishments (geographical entities) divided into four categories: 180 regional hospital centres, 936 hospital centres (including the former local hospitals), 92 hospital centres specialized in psychiatry and 139 other public establishments, corresponding mainly to long-term care units. The private sector includes 972 private for-profit clinics and 670 private not-for-profit establishments, including 20 cancer centres. Between 2013 and 2020, the number of public or private geographical entities fell from 3,125 at the end of 2013 to 2,989 at the end of 2019 (-4.3%), as a result of reorganisation and restructuring. This evolution is more marked for public hospitals (-5.1%) than for private for-profit (-4.6%) and non-profit (-1.9%) facilities.

Over the last ten years, the organisation of healthcare provision has evolved: the continuous decrease in full hospitalisation capacity has been reflected in a significant increase in the number of partial hospitalisation places. In 2020, there were 387,000 full hospitalisation beds in health care institutions, 82,000 fewer than in 2003. This decrease is mainly due to a reduction in the capacity of long-term care units, due to the transformation of certain units into establishments for dependent elderly people. It is also explained by a fairly regular decline in short-stay beds (-38,000 beds in 17 years). This decrease was made possible by the development of ambulatory care, which has allowed for alternative forms of care to full hospitalisation. As a result, partial hospitalisation capacity has increased to a total of 80,000 places in 2020. However, the number of places has grown more slowly since 2013. On the other hand, medium-stay capacity has increased. Between 2017 and 2019, the average bed occupancy rate was 82.6% ⁽⁴⁰⁾. The rate is lowest in short-stay care (77.5%) and highest in long-term care (93.1%).

40. In 2020, due to the many interventions cancelled in response to the COVID-19 crisis, the number of full hospital days fell much more sharply than the number of patient beds, automatically resulting in a fall in the bed occupancy rate (at 77.2%).

At the end of 2019, 1.36 million workers were employed in the hospital sector. The public sector employs 77% of the hospital sector's salaried workforce (1.1 million workers), with the remainder in the private sector (for-profit and not-for-profit) (309,000 workers). In 2019, hospital employment represents 5.3% of salaried employment and 4.7% of total employment in France.

The number of salaried medical staff (including interns, acting interns and midwives) in the public hospitals at the end of 2019 was 139,000 (vs 25,000 in private hospitals), i.e. 84% of the employees employed in the entire hospital sector. They are divided into 92,000 doctors and equivalent (19,000 in private hospitals), 33,000 interns and similar staff (2,600 in private hospitals) and 13,000 midwives (3,700 in private hospitals). The number of salaried non-medical care staff in the public hospitals stands at 638,000 at the end of 2019, including 263,000 nurses (90,000 in private hospitals) and 226,000 nursing assistants (59,000 in private hospitals) as well as 148,000 other healthcare personnel (60,000 in private hospitals). The number of salaried non-medical non-healthcare staff in the public hospitals was 273,000 at the end of 2019 (73,000 in private hospital). In addition to these salaried staff, hospital activity is also carried out by liberal medical personnel (non-salaried) practising in health care institutions. There are nearly 42,000 of them and 84% of them are in private for-profit clinics.

In this study, we focus only on the public hospital sector. The trade union representatives interviewed are all from the public hospitals, as are the focus group participants, and only 5% of the DGQS (web survey) respondents work in the private hospital sector.

Since 2010, the number of workers in public hospitals has been slowing down: the annual growth rate fell from 1.7% at the end of 2010 to 0.8% at the end of 2016. In 2016, the number decreased by 0.13%, for the first time since 2003, a decline which accelerated in 2017 (-0.18%) and 2018 (-0.28% or -2,916 workers). This decline concerned exclusively other healthcare personnel, the number of which fell by 7% between 2015 and 2018, due in particular to the decrease in the number of assisted contracts in the hospital civil service, while the number of workers in all other categories rose slightly. In 2019, a slight rebound was observed in the number of employees in the public hospital sector, which increased by 0.2% (+2,200 workers). As the number of subsidized contracts in public hospitals gradually ceases to decline, the number of non-medical care staff is stabilising after four years of decline. The lifting of this brake explains most of the rebound in public hospital salaried staff in 2019.

2.3.2 History and patterns of digitalisation in the sector

All the trade union representatives interviewed mention that computers and tablets using wifi and Bluetooth technology have become widespread. These are essential tools for both care and hospital management. In some professions, workers are also equipped with mobile phones necessary for their activity (*e.g.* stretcher-bearers to run errands as quickly as possible).

All the trade union representatives report two main digital tools currently used in the hospital: computer software – extended to manage patient information and the different parts of the hospital (invoice, planning, work organisation and staff schedules, etc.) – and job platforms (see below).

INT13 also refers to the use of other information and communication tools:

- The use of e-mail is not yet completely widespread but in many places professionals have a professional e-mail address.
- Intranets within hospitals have also spread massively.
- There are also more and more links and flash codes (e.g. in some maternity wards, with shorter stays, there is a flash code to advise the mother).
- Finally, there are more and more distance training courses and tutorials, as well as micro-training modules that allow as many people as possible to be trained as quickly as possible.

The focus group for the sector (FG2) is more nuanced concerning the widespread use of digital tools. The most widely used devices are computers. Nurses also use wireless landline phones, which imply restrictions, particularly on the phone numbers that can be called. The intranet is used daily (more than the Internet) as well as emails, but more by secretaries than nurses. For nurses, there is often an address for the service and email is used to communicate with management, more specifically to receive information from management (see below). All the participants in the focus group refer to recurring problems with the internal hospital network.

The last five years have been particularly characterised by three phenomena, some of which are linked to the Digital Hospital strategy and the Hopen programme (see box 1). First, the use of digital tools has spread. These tools have enabled the development of telemedicine and remote monitoring. In a context of reductions in the number of beds, the advantage has been *'to develop more facilities for being at the patient's bedside without being there'* (INT11). The drawback is the dehumanisation of care. Second, there has been a systematic transition to computerised patient records. The advantages of these are traceability and reversal of the burden of proof, and the downside is the intensification of work (see below). Third, the wide range of software has led to operational difficulties. At the hospital, many information systems coexist. Hospitals often operate as Territorial Hospital Groups (THG) bringing together several establishments with no uniformity in terms of software. Within the same hospital, the main software used depends on the department. According to INT11, this is for cost reasons (some software is cheaper than others): *'as there was no core IT profession within the hospital and IT*

engineers were not interested in the hospital, it was senior technicians, supervisors or levels below engineers who implemented the IT systems'(INT11).

INT13 notes that *'this creates major difficulties: when a patient has to change departments, we don't have the right information in the right place'*. In addition, the software has not been developed with professionals. It is designed only by IT engineers. As a result, it is not intuitive enough and is difficult to use for some workers. *'When you are a caregiver or a nurse in the hospital, you are not a computer scientist. We need to have easy-to-access software'* (INT13). The consequence is an increase in training needs. Greater investment should have been made in software but also in securing the data and in the skilled staff to deal with it.

Nevertheless, INT12 also underlines that today, there is common software for invoicing, economic and financial data, vehicle management and work orders.

Box 1. From the Digital Hospital strategy to the Hopen programme

Launched in 2011, the Digital Hospital strategy was the national strategy for hospital information systems for the period 2012-2016. The aim of this strategy was to raise the level of maturity of information systems in all healthcare institutions towards a common core, in order to improve the quality and safety of care.

The common core of the digital hospital strategy is made up of five functional areas: *(i)* imaging, biology and anatomical-pathology results; *(ii)* computerized and interoperable patient records; *(iii)* electronic prescriptions feeding into the care plan; *(iv)* resource scheduling and the patient's agenda; and *(v)* medico-economic management.

Six years later, the programme has been welcomed by healthcare institutions for its methodology and usefulness. Its indicators reveal a real digital dynamic. However, not all the priority areas for digitalisation have progressed at the same rate. For example, while nearly 50% of hospitals have met the requirements for electronic prescriptions, only 15% have achieved the goal of an interoperable electronic patient record.

In order to continue the trend initiated by the Digital Hospital programme, the Hopen programme, launched in 2022, constitutes the new 5-year national action plan for hospital information systems. Hopen has taken up the objectives of increasing the maturity of the five priority functional domains, raising its requirement level and integrating new priorities, such as communication and exchanges with external partners as well as online services for patients, in connection with the implementation of new regulatory requirements (the General Data Protection Regulation (GDPR), deployment of the National Health Identifier, certification of accounts, administrative simplification).

The objective is also to achieve territorial and regional harmonisation of digital services, in particular by convergence of information systems within Territorial Hospital Groups (THG)

Over the next five years, union representatives anticipate four main trends in digitalisation. First, the individualisation of care will increase with the digital technologies that have already been introduced to hospitals; this will allow for a different kind of care *'almost directly with [electronic] chips'* (INT11). Second, the reduction in bed numbers and the development of ambulatory care

will intensify the development of telemedicine and remote monitoring as regions lose their access to healthcare (INT11 and INT13). Third, health data will be centralised, helped by the digitalisation of shared medical records (INT11). The advantages are that all a patient's medical data will be centralised in one place, and that the system allows for control and traceability. The downside is dehumanisation and the question of data protection. The risk is that some mutual insurance companies will charge according to health status. Fourth, the standardisation of software will continue (INT11). INT13 also points to two other developments: the improvement of voice dictation for secretary jobs and the improvement of communication networks, as there are currently insufficient WiFi terminals, particularly in large establishments.

2.3.3 Work organisation

2.3.3.1 A very low level of telework

All the trade union representatives underline that hospital civil servants are the public sector staff who telework the least. The administrative services are the only services in the hospital structure that can work remotely. But it was not in the hospital's culture. INT11 specifies that *'the question of control appeared to be the main obstacle. The management likes to have the staff under control'* (INT11). Telework was almost non-existent and only appeared with the pandemic. According to INT11, teleworkers realised that excessive telework caused problems of work organisation because work in the office was accumulating and then they were late. Today, there is still some teleworking because it suits the staff, but it has not been maintained to any great extent. The frequency depends on agreements. INT13 regrets the fact that telework is not more developed in the hospital civil service although *'it could be for many positions'*.

The DGQS reveals that 70% of respondents telework on average one day per week or less and 21% prefer not to say. This last figure is striking and there is some question as to whether it indicates the presence of informal teleworking practices.

The focus group (FG2) confirms this frequency of one day of telework per week, following up to 3 or 4 days during the COVID-19 pandemic. The participants who can telework consider that the permission to telework is largely dependent on the manager. Telework creates monitoring practices which do not normally exist in the hospital. A secretary noted that she is not monitored by her manager, except when she is teleworking.

2.3.3.2 Work intensification, especially for nurses and midwives

In the public hospital sector, the French surveys on working conditions (2013, 2016, 2019) show that work intensity is greater for nurses, midwives and caregivers than for all other hospital sector workers. Nurses and midwives are the two professional groups that most frequently declare an excessive amount of work (around 65% in 2019, upward trend), working under pressure more frequently (65% in 2019, upward trend), having to hurry always or often more

frequently reported (72% in 2019, upward trend). Frequent interruption for an unplanned task has also increased. In parallel, the same data source underlines that the workers' opinion of the resources available in the hospital sector is mixed but evolved negatively over the period 2016-2019 (DREES, 2021). As regards material resources, perceptions are improving. However, the feeling of having enough time to do one's job properly and the feeling of having enough colleagues fell by 4% points and 3% points respectively between 2016 and 2019 (DGAFP, 2021).

In this context, all the trade union representatives interviewed insist that digitalisation has resulted in an intensification of work. This can be explained in two ways.

Firstly, digital technologies have led to processes that allow tasks to be programmed, with calculated times for each. Staff are then allocated to carry them out, but in reality, things do not happen in this way. INT13 points out that this difference between prescribed work and real work has increased the intensity of the work: *'On paper, it works. The patients are put in boxes on the computer schedule and then at the end, there is no real study of the workload. The management says 'you have 12 patients to take care of', but if 5 of them are very complex cases, it's not the same as having 12 easy patients. So it's this notion of real evaluation of the workload that is not yet underway and that digitalisation does not yet allow'*. For INT11, the increased prescribing of tasks is one of the two sides of an increase in control brought about by digitalisation. The second consists of increased control over the workers themselves: *'from the moment it is computerised, we have more control over whether the work is done or not. So there's a lot less choice about what I do or what I don't do'*. This strengthening of control as a vector of work intensification is also reported by INT13: *'There is an increase of control: in certain places, in particular stretcher bearers, there is increased traceability on running time. It is pressure that is not necessarily well experienced by professionals.'*

Secondly, digital tasks are added to care-related tasks. The best example is certainly double traceability. INT13 reports that the secretaries continue to print out the reports and put them in the doctor's box even though he has an e-mail address. INT11 insists that health establishments have not properly integrated new jobs related to computerisation and specifies that *'secretarial time should be added so that the nurses are released from this time which is not their responsibility'*.

The continuing use of paper is certainly one of the most important findings from the focus group (FG2). Nurses insist that all information transmitted between them in the service is in paper format (for safety reasons). In addition, the patient file has a hybrid format (digital + paper). The reason is that digital tools used by various departments cannot always communicate together, even within the hospital itself. For continuity across the different services, paper patient files are still necessary. This hybrid format has two consequences. Firstly, it creates different uses

according to the categories of staff: medical staff (doctors) use information in digital format and can share information with each other, but the same does not apply to non-medical staff (nurses, caregivers). Secondly, it leads to an increase in secretarial tasks for secretaries. Scanning documents and gathering information for the patient file are very time-consuming, especially since more information about the patient is needed (for example, retrieve more information during patient admission; complete the missing information when appointments are made directly on the platforms (Doctolib), which is increasingly the case).

The intensification of work can be mitigated by saving time on certain tasks enabled by digitalisation. INT13 thus notes that *'the nurses have access to their tablets, they will not be obliged to return to the patient file which is at the other end of the corridor in the paper file, they will directly find the medical instructions'*. Similarly, when the patient is discharged from the hospital, *'the nurse does not have to wait next to the doctor when he makes his check-up visit. He puts his prescription in the computerised patient file. The nurse sees that it's done and so the patient can leave. All this can save time'*. But this remains insufficient, and the interviewee hopes that in the future, digitalisation will make it possible to gain in efficiency and recover time for patients. *'As we are already understaffed, this would limit tensions. If we could recover some time with effective digital technology, we would have better public health care'* (INT13).

In the focus group FG2, some participants also recognise that digitalisation has brought a certain ease and greater comfort, such as the speed of searching for the patient's file (physical archives are very time-consuming to consult) and some time savings through the use of e-mails to communicate with patients. INT12 emphasizes that digitalisation has also reduced social relations (between colleagues) as the staff member himself records information in the computer: *'Instead of transmission [of patient records] around the table, after each one has gone round the rooms of her/his patients, everything is in the computer because we had to save time. This has negative effects on learning the job'*. This reduction in human contact in the workplace is also due to the widespread use of communication by e-mail: *'all the memos, the information that was discussed in meetings, posted, validated by colleagues, is transmitted digitally and we say "if you knew, we would have sent it to you"'* (INT13). This view is more nuanced in the focus group (FG2), as documents are transmitted in paper format, which more often makes it necessary to call other services directly to get the right information.

These observations confirm several studies which showed that the computerisation of health services has led to a reconfiguration of tasks. This has altered the autonomy and quality of the working life of hospital staff (Grevin, 2011; Mieg, 2017; Haliday and Naudin, 2019), with an increase in the time spent updating information on the various IT tools, to the detriment of interpersonal communication.

The DGQS confirms that digitalisation has led to an intensification of work. 60% of respondents point out that digital tools have increased their pace of work/work intensity while 22% think the opposite. 53% of respondents disagree that digital tools have reduced the time needed for routine repetitive tasks. 66% of respondents disagree that digital tools have given them time to focus on significant aspects of their job. However, concerning autonomy to schedule work tasks, the results are much less clear-cut than the comment made by the union representatives interviewed. On this subject, 34% of respondents agree that digital tools have given them more autonomy while 38% think the opposite.

2.3.3.3 Unclear effects on autonomy

Employees in the hospital sector have less autonomy than employees in the whole economy, but it is increasing, so that the gap between them is narrowing. According to the French survey on working conditions (2013, 2016, 2019), strict following of instructions is less frequently reported by hospital sector employees in 2019 (35%) than in 2016 (40%); this brings it closer to the level observed for all employees, which has remained stable over the period (34% in 2019) (DREES, 2021). Conversely, although less frequently reported, the setting of quantified goals to be achieved is now happening more often. Goals were set for 19% of employees in the sector in 2019 (compared to 17% in 2013), compared with a 31% average for employees in all sectors.

Digitalisation results in reduced autonomy in work organisation (see above). According to INT13, 'computerised management of schedules makes professionals look like pawns'.

But concerning the content of the work, INT13 points out that nurses can gain autonomy: 'If she has any doubts about certain elements, she can also get information on her tablet or access Vidal (medicine dictionary) to check medical prescriptions'.

However, this segmentation between autonomy in the organisation of work and autonomy in the content of work is questionable. According to INT11, the increased control reduces the possibilities for choice in work. Digitalisation makes it possible to better monitor the achievement of objectives and reduces the workers' discretion in the care of patients (see the above discussion on control). The feeling of increased control was also noted by the focus group participants (FG2).

The DGQS confirms these ambiguous effects of digitalisation on autonomy. 32% of respondents say that digital tools have given them more autonomy to organise their work tasks while 39% think the opposite.

2.3.3.4 Conflicts of value exacerbated

Those working in the hospital can experience conflicts of values. According to the French survey on working conditions, in 2019, 49% of employees in the sector say they receive conflicting

instructions, the same as in 2013, compared with 45% in 2016. This is more than the general percentage for all employees (41% in 2019). Nurses and midwives are the most affected (59% in 2019) (DGAFP, 2021).

These value conflicts can take on a more personal dimension, measured by the feeling of having to do things one disapproves of. The mismatch between workload, the demands associated with the job and the means available to carry it out is likely to fuel these feelings.

Digitalisation exacerbated value conflicts: 'for example, you have a goal: at the end of the day, you have to have taken everyone's blood pressure. If you're with someone who's not well, if you make the choice to sit down with that person and talk with them, you know that then the rest of the job won't get done. But that person is not well. So there are times when your choices are constrained at work. It can be seen as a way of compartmentalizing the work' (INT11).

In the focus group (FG2), the nurses also report that starting up the doctors' computer, changing the paper in the printer and resolving computer problems are now included in their work tasks: they are on the front line (the IT department is called in only when they cannot find a solution themselves).

2.3.3.5 Digitalisation: a loss of meaning at work? 'The biggest patient in the hospital today is the computer' (a psychiatrist quoted by INT11)

The use of ICT in health care services, intended to save time, proves to be time-consuming: time to start up digital tools, to process files, to send processed files. In the focus group (FG2), the general feeling of the participants seems to be: 'We spend too much time on administrative work, to the detriment of the patient', as one participant says.

INT11 thinks that the electronic prescription 'is a big waste of time'. INT12 has a more nuanced opinion: 'when you are the subject of a complaint, traceability saves your life in some way'. Digital tasks have radically changed the very meaning of the nurses' work: 'Is it a nurse's job to sit in front of a computer typing a report of a meeting or an interview?' (INT11).

The nursing staff spend more time in front of their computers to deal with computerised patient records. INT12 points out that this requires the nursing staff to set out all care activities, examinations and prescriptions: 'It adds considerably to the administrative workload. Caregivers are very unhappy that they spend part of their time not caring'. According to INT11, the account previously written on paper is now entered into a secure, traceable computer file, but with a loss of business resources initially intended for care: 'The computer tool that was introduced into the hospital was also a way for the administration to have more quantified information on the workload, on the work, on the fact of facilitating the transmission of data. It was a saving for them but with a significant loss of substance for the care' (INT11).

Many professionals feel that care management has become in practice a matter of cost management and power, relegating the primary task of taking the time to care for patients to the background (Clot, 2015). According to INT11, 'in the end, the digitalisation of care services has been a waste of time and has made many people resistant to IT'. The situation is different outside the care services. Things have been done in a more pragmatic way.

2.3.4 Working time

Workers in public hospitals are more often subject to atypical working hours than employees as a whole. According to the 2019 French survey on working conditions, more than half of them work in the morning between 5 a.m. and 7 a.m. and in the evening between 8 p.m. and midnight. More than 60% of them work on Sundays, more than two thirds work on Saturdays. A third work at night and almost 20% work alternating hours (DGAFP, 2021). Nevertheless, these figures are lower in the public hospital sector, particularly those on Saturday work.

Public hospital workers also have to work overtime more than those in other public services and private sector employees. Nearly 40% of them work overtime every day or often and 25% of them do not have 48 hours of consecutive rest per week. 22% cannot be absent for a few hours in the case of unforeseen personal or family events (DGAFP, 2021).

The union representatives interviewed indicate that digitalisation itself has generally had no effect on working time. INT13 notes that *'digitalisation has impacted the quality of work rather than working time. Professionals work overtime, but it is not digitisation that is doing this'*.

According to INT11, at most, the software has made it possible to manage working time more effectively: *'We are clearer on the management of working time, but that has not changed much about working time itself. The workforce being what they are and given the issues, things are still just as complicated'*. INT11 points out that the working time management software has sometimes been designed with the involvement of workers and health managers, which has made it possible to better configure the software. INT12 notes, however, an increase in working time as staff give up their break times: *'Free time used to exist. There were coffee breaks, for example. This time has disappeared because caregivers spend their time typing up information, they close themselves off, they immerse themselves in their computers'*.

The findings from the DGQS are less categorical than the findings of the trade union representatives. 64% of the respondents consider that the number of working hours set in their contract has not changed. For 34%, working hours have increased (somewhat, 19% or significantly, 15%). 13% of respondents say that digital tools and processes have increased paid overtime and 30% that they have increased unpaid overtime. However, it may be difficult to

distinguish the specific effects of digitalisation from those related to work organisation and lack of resources. 27% of respondents confirm that digital tools have reduced the number and/or the duration of break periods, while only 7% consider that they have increased.

The participants to the focus group (F2) consider that digitalisation does not generally result in overtime. However, some staff may work overtime due to network failures: they may have to finish their working day later (overtime hours are not paid in this case). When asked about the additional hours offered in other services/hospitals, some participants explain that they sometimes have replaced other staff but rarely through such platforms. They nevertheless underline that there are several tens of offers (especially for nurses) of (formal) overtime hours at any moment, for tasks representing from 7 to 12 hours of work. Such 'overtime hours' proposals can be offered through specific platforms, emails from the managers, or even from WhatsApp groups, to which some of the interviewees have subscribed (⁴¹).

2.3.5 Health and safety and outcomes for workers

2.3.5.1 Effects on mental health

All the trade union representatives interviewed highlight the effects of digitalisation on mental health. According to Lhuillier (2010), the fact that caregivers work much less with patients can be detrimental to the quality of care and constitute an additional stress factor. Digitalisation reinforces this finding. In addition, there is the pressure of knowing that all the information entered can be consulted and that each person's activity can be quantified, hence the development of an uneasiness in health care establishments (Piperini et al. 2020).

INT12 points to the increased mental burden, especially due to the multiplication and frequent change of passwords (*'there are several passwords to access the computerised patient file. The passwords change every month. The mental load linked to the digital exercise is terrible'*) and the widespread use of communication by e-mail (*'this managerial management by e-mail is detestable. It is assumed that you have read the content and understood the information. And if you don't understand, you don't have the skills'*). INT12 mentions an increase in stress caused in particular by the frequent change of tools and software. The focus group (FG2) helps to understand the situation better. Some difficulties may also occur due to the 'log-in' procedures on computers shared by several people. Indeed, the person who is assumed to be logged in is the one who turned on the computer in the morning. Similarly, if a colleague on leave is replaced, the temporary staff member cannot log in with his own identifier, but must use his colleague's ID (different accreditations are planned for different users), with password/logins 'automatically

41. The participants in the focus group do not normally use this system.

inserted'. The FG2 also underline that digital tools can be a source of stress when IT malfunctions (hardware, software or network problems).

INT11 and INT13 confirm this effect of digital tools on mental health, when people are called at home on their mobile phone to go back into work: *'there is an anxiety to know if we are going to be called back'* (INT11). INT13 mentions the psychosocial risks (PSR). However, this deterioration in mental health must be linked to the organisation of work: *'Stress, burnout, mental fatigue, I think it is all linked to the organisation of work. Perhaps digital technology is a factor in the increase of PSR, but these are primarily due to the organisation of work'* (INT13). INT11 recalls that with the computerised patient records, traceability has been improved. However, *'the reversal of the burden of proof⁽⁴²⁾ has led to the institution being taken out of the responsibility process and the fault being placed on the head of the staff member This can be a source of stress for some workers.'*

The DGQS shows that digitalisation has made the overall situation worse. 40% of respondents think that digitalisation of their work has caused or worsened psychological problems (stress, mental fatigue, burnout, etc.) while only 2% feel that it helped them to better handle a pre-existing physical pain/condition. Surprisingly, given the findings of the trade unions, fewer respondents felt effects on mental health than on physical health (see below). The main mental problems are stress (for 26% of respondents) and mental fatigue (26% of respondents).

2.3.5.2 Strong physical constraints and physical health

Hospital care leads to exposure to physical stresses that are particularly widespread in the sector, more so than for employees in general. These include prolonged standing, other tiring postural constraints, carrying heavy loads, long or frequent walking, and painful or tiring movements. According to the French surveys on working conditions⁽⁴³⁾, these physical constraints remained at a similar level over the 2013-2019 period, except for other tiring postural constraints (which affected 47% of employees in the sector in 2019, compared to 40% in 2016). These five types of constraints are most frequently reported by care assistants, then by maintenance workers and nurses and midwives (DGAFP, 2021).

Digitalisation may have relieved some physical constraints. The DGQS shows that 26% of respondents say that the main use of digital machines in their work is to lift, to move, to change the position of heavy loads or persons. This is the third main usage (with results close to the first). However, this technological assistance turns out to be insufficient, as only 1% of

42. Indeed, with the implementation of computerised patient records, it is no longer up to the victim of a medical error to prove an error but up to the doctor to prove that he did not commit a fault.

43. These surveys are carried out every three years by the Department of Animation, Research and Statistical Studies of the Ministry of Labour.

respondents feel that they are less subject to painful physical stresses. INT13, one of the trade union representatives, mentioned 'bed movers', machines that help move beds and avoid the carrying of heavy loads. But these are not digital machines.

Regarding the effects on physical health, union representatives do not mention any improvement in health. On the contrary, they report negative effects related to the use of computers. INT12 thus highlights musculoskeletal and vision problems. For INT11, the effects are broader: 'The computer tool causes carpal tunnel, back and vision problems.' For INT13, physical problems are more related to the intensification of work caused by digitalisation than to the digitalisation itself.

Regarding the postures induced by the widespread use of IT, INT12 emphasised that the hospital had equipped workers with ergonomic chairs and desks: 'nurses are quite demanding on that. So we made investments.'

INT11 qualifies this point and indicates that the ergonomic aspect of the use of machines was a big difficulty at the beginning: 'It was complicated at the beginning, especially in the secretariat areas.' Furthermore, according to INT11, many establishments now consider the effects of digitalisation on physical health, but certain good practices are not yet widespread and 'this also comes from the staff'.

The DGQS shows that digitalisation has worsened the situation overall. 48% of respondents think that digital tools have caused or aggravated a physical pain/condition (back pain, neck pain, hand pain, eye problems) while only 3% feel that it has helped them to better handle a pre-existing physical pain/condition. The main physical problems are vision problems (for 22% of respondents), neck pains (16% of respondents), head pains (16% of respondents), then hand pain (12% of respondents) and back pain (11%).

Some focus group (FG2) participants stress that digitalisation causes certain health problems, postural as well as certain headaches and eyesight problems: 'It adds occupational diseases [sic], whereas in our profession there are already quite a lot'. In addition, the hardware is not always suitable and staff emphasize some differences among the services. The example given is that of computer screens with inappropriate lighting. Some services are well equipped with screens filtering blue light, or other adapted equipment (adapted seats, etc.).

2.3.5.3 Strong emotional requirements

Emotional requirements are inherent to the care activity. Psychiatry, oncology, palliative care and long-stay services are demanding activities because staff are dealing with death and because they require a relational commitment. According to the 2019 French surveys on working conditions, in hospitals, 90% of orderlies, nurses and midwives are in contact with people in

distress (DGAFP, 2021). Consequently, the fact that they always or sometimes have to hide their emotions is frequently declared by employees in the sector.

These emotional demands are all the more difficult to manage in a context of work intensification. Digitalisation is not a problem in this but rather a solution: it can appear as a way out, as priority can be given to digital tasks to the detriment of those related to care. This may result in some nurses withdrawing. INT11 thus emphasizes that IT has become a refuge for some healthcare staff. This is mainly true of young people lacking experience: 'We have seen students who hid behind the computer to avoid contact with patients because they lacked training and knowledge of pathologies. Nursing training is very much criticised today'. This phenomenon is all the more serious because it occurs in a context of declining social relationships (see above).

According to INT12, this produces a division of labour between certain nurses and certain caregivers: 'Before, when a patient rang the bell, it was either the caregiver or the nurse who went. Now, the nurse is in front of her computer, she doesn't go anymore. It's the caregiver who goes there systematically'.

Furthermore, nurses and midwives as well as doctors are more exposed to situations of tension with the public. This is true of 20% of nurses and midwives and 17% of doctors, according to the 2019 French survey on working conditions (DGAFP, 2021). On this point, the DGQS shows that digitalisation has not brought about any significant change. 52% of respondents disagree that digital tools have improved the quality of their interactions with public service users. 21% of respondents feel that they are more exposed to physical or verbal violence from users than before, while 40% consider this is not the case.

2.3.6 Skills and learning

In order to adapt to digitalisation, professionals have had to use various types of software and develop computer skills: 'The only skills we have improved are computer skills, but not in terms of care' (INT12). However, according to INT11, training is often poorly integrated into the process of setting up new technologies. INT13 also notes that 'IT training is not very well developed'. INT11 gave an example: 'I saw nurses in psychiatry having to type meeting reports that were 5-6 pages long, they were typing it with one finger, they hadn't mastered the tool at all'.

Training issues are aggravated by the fact that the software has not been developed with input from the staff. It is designed only by computer scientists, which means that it is not intuitive enough and is difficult to use for some workers (see above).

More specifically, INT 13 explains that the training problems are due to two factors. The first is the lack of staff: 'We don't have enough people to send people to training because, during that time, we still have to take care of the patients. This is a big problem, with training courses being refused because of a lack of staff'. The second is the high cost of training, due to a lack of internal trainers: 'We don't have these professionals internally. As a result, we have to look outside for expensive training'. INT11 also emphasized that the nursing staff was not trained because computer training was very expensive.

As a result, workers are often forced to adapt by themselves: 'If we arrive in a service, we deal with it. There is no understudy, no explanation because there is a lack of staff. This is also linked to the multiplicity of applications' (INT13). In the view of INT13, young professionals have easier access to the digital tools than older ones, especially since the software has been developed by external IT specialists, and is not geared to the work at the hospital.

But training does not solve everything. INT11 argues that when the medical secretariats were computerized, the workers were trained to use a computer and to use basic software (Microsoft Office). But when they returned from the training, there was no equipment, which partly cancelled the benefit of the training.

The results of the DGQS confirm the differing amounts of training given to hospital staff. 55% of respondents replied that the introduction of digital tools in their everyday work required them to develop new skills, while 40% did not need training because they identified no new digital skills or they already had the required skills. 26% of respondents said they needed to develop both general digital literacy methods and specific digital skills, but only 20% of them have received training from their employer on these two aspects. 29% of respondents said they needed only some specific digital skills required by digital tools and/or software. Regarding this aspect, training has benefited more respondents (40% of them) than those who said they needed it. 42% received no formal training or learned informally in their environment. For those who were given training, 69% of respondents considered that it met their needs.

In the focus group (FG2), some caregivers or nurses explain that requests for training related to digital applications commonly used at the hospital are systematically refused to them, which made one of them comment: 'because we are not administrative staff, while we have to perform some administrative work'. In practice, participants have mainly been trained by colleagues on some digital applications that they use, which is the most common form of training (together with self-training). As a possible substitute, a tutorial is available (with no one to help if questions or misunderstandings arise). According to one of the participants, new entrants are not trained in the general software of the hospital.

2.3.7 Reconciling work and personal life

All trade union representatives highlight that the boundary between private and professional life has changed and become more blurred. According to them, two changes explain this development.

First, there are several platforms (Hublot, Whoog, Meetgo) where hospital workers (called 'mercenaries' by INT11) can register when they need to, to provide work to other services or establishments in order to be better paid. INT12 and INT13 specify that workers are paid overtime. INT12 points out that these applications have made it easier for managers to address the shortage of nursing staff (which dates back fifteen years) but they constitute disguised on-call duty work: *'we used to spend our time calling people at home on their personal landline or mobile phone to come back to work. We had the numbers listed as part of the white plan, so we diverted the white plan with the agreement of the management and also with the agreement of certain employees to recover the numbers of the staff members.'*

Staff working time does not seem to be monitored using these applications. In principle, workers should not perform more than 3 days per month of unscheduled work through these platforms. But, in reality, managers would not be able to know how much time an agent has already worked when doing an assignment through these platforms: *'When we ask some managers: how do you check the consistency between the agent's working time and what he has done elsewhere on Hublot? They tell us: normally, it's 3 days max per month so that's an extra 21 hours, so we stay within the statutory time'* (INT13). As a result, according to INT13, the overtime can be huge. This assessment is confirmed by INT12: *'Sometimes, staff members accept things that are totally illegal. For example, if I need a nurse this afternoon, I send a mission on Whoog. A nurse answers. I don't know if she was on morning duty or night duty. We can't see that. We realised that there were people who replied that they were available in the afternoon even though they were on morning duty. And, as a result, they were working the equivalent of two days, which is totally illegal. This puts patients at risk. Managers have no way of monitoring this.'*

Second, the smartphone has also become an easier way to call people back to work. This has changed the lives of staff, especially since some departments have asked for email addresses and phone numbers to call people. The privacy/professional life divide has been changed by instant messaging applications and WhatsApp groups. On this subject, trade union representatives have nuanced views, with various assessments. According to INT13, WhatsApp and the discussion groups are not only linked to the hospital: *'Of course there are things that go around on WhatsApp (Could you take my Monday night? Did you see what happened this morning on the service?). If there was not that, we would wait until the next day to see with the colleague. But WhatsApp is also family, friendly, the private circle. It's a non-disconnection'*. INT11 appears particularly worried by the fact that, even when not working, staff continue to be aware of what's going on in the Teams application, which weakens the resting time. *'Being on WhatsApp groups*

where they see that there are colleagues in trouble could prompt some to volunteer to go to work'. INT12 goes further and sees WhatsApp groups as a way of disguising on-call duty: 'It is often initiated by the manager. For example, so-and-so is ill, who can replace him? It becomes the equivalent of a disguised on-call duty that is absolutely illegal'.

The principal result of the DGQS is that only 7% of respondents believe that digitalisation has increased their personal time while 43% consider that digitalisation has increased their work time at the expense of their personal time (see above). But, at the same time, 26% of respondents feel that digitalisation has affected the amount of time that they spend outside of their work. Maybe the platforms for job offers could explain that. When they telework from home, 39% of respondents feel that it is difficult to clearly differentiate between their working time and their personal time.

A right to disconnect was introduced by the circular of March 31, 2017, which calls for 'time charters' to be put in place as part of social dialogue. For INT11, this is a first step forward. This right is recalled in the agreement of July 13, 2021 on telework in the civil service.

The participants in the focus group (FG2) explain that they are able to disconnect, after their daily work or on holiday. But they also report that some of their colleagues are always psychologically connected, for instance sending emails during their holidays.

2.3.8 Career prospects and employment security

Union representatives all mentioned a lack of resources at the hospital. There are not enough jobs, which leads staff to work permanently in degraded conditions. Digitalisation, which is part of this context, results in an intensification of work and a loss of the meaning of work by diverting care workers from the act of care (see above).

This general situation in the hospital is causing discontent and even discouragement among staff. From this point of view, it does not improve career prospects. According to INT12, there is a lot of professional insecurity, reflected in the high mobility of hospital workers: 'there is enormous mobility, professional wandering. This is linked to the introduction of the managerial logic according to which people have to be moved, put in subjective insecurity to give their best, break the routines to be more productive. The result is that you no longer belong to the hospital'.

Beyond the general situation, INT13 indicates that professional mobility is hampered by the diversity of the software used and the incomplete training: 'some caregivers or less trained professionals have sometimes refused to change departments or to take up another post because they knew it was such and such software in another department and it scared them. There is the notion of digital divide which is important'.

The DGQS confirms these observations concerning career prospects and job security. 48% of respondents consider that digitalisation has not improved job security and future prospects while only 12% think the opposite. And while 48% of respondents see their job as less interesting and attractive, 22% think the exact opposite. Consequently, digitalisation has not made workers more confident in their future prospects, as only 40% of respondents have this feeling while 9% think the opposite.

2.3.9 Workers' rights

Digitalisation has not had any effect on employee representation, except during the health crisis, when the relevant bodies functioned remotely. There is currently a reform underway of the social dialogue instances which aims to merge the technical committees and the health, safety and working conditions committees into a social and economic committee, but this reform is unrelated to digitalisation.

Concerning the representation of workers, INT11 points out that the ministry wants to introduce electronic voting for the whole civil service. FO is opposed to it because the effects on the participation rate have been very negative. According to INT13, from a trade union point of view, digital technology has facilitated access to staff thanks to e-mails: *'We can send information, links and videos by e-mail. Before, we had to put leaflets in envelopes to send to everyone. Now we send them by e-mail'*.

2.3.10 Conclusions on the sector

Digitalisation in the sector has developed in a context of decreasing means (reduction of hospital capacities). The widespread use of digital tools (computers and tablets using Wifi and bluetooth technology) and the generalisation of e-mails and intranet have enabled innovations (telemedicine and remote monitoring) which have made it possible to support the reduction in resources.

A wide variety of software has been deployed, differing from one hospital to another, and even from one department to another, creating operational rigidities (compatibility problems, training problems). Hospital civil servants are the public sector agents who telework least often. The administrative services are the only services within the hospital structure that can work remotely (one day per week or less).

Digitalisation has led to work intensification in two ways: firstly, the introduction of processes to plan tasks with calculated times for each task; this has resulted in a greater difference between prescribed and actual work, which is a factor in work intensification. Secondly, digital tasks have been added to the care tasks and have proved to be time-consuming, although they were

designed to save time. However, time is saved on certain tasks by digitalisation, which can mitigate work intensification.

By adding digital tasks to care-related tasks, digitalisation exacerbates already significant value conflicts. Working in the hospital is a source of value conflicts (the feeling of having to do things one disapproves of) because of the mismatch between workload, the demands of the job and the means available to do it.

Concerning autonomy, the effects are ambiguous: as tasks are increasingly prescribed, digitalisation reduces autonomy in the organisation of work (see above) but workers can gain autonomy in terms of content of the work. This indeterminacy appears clearly in the results of the web survey (DGQS). Digitalisation results in enhanced monitoring of the work process and workers themselves.

Digitalisation constitutes an additional stress factor and increases the mental load in four ways: less work with patients, which is detrimental to the quality of care; traceability, in the broad sense (possibility to consult and quantify each worker, reversal of the burden of proof); the frequent change of software and passwords (particularly on shared computers), the call back to workers during rest times on their mobile phone.

With regard to physical health, digitalisation may have improved some physical stresses by providing technological assistance to workers, but this is not sufficient to counter negative effects related to the use of computers (back pain, neck pain, hand pain, eye problems).

Training is insufficient. It is made more complicated by the specificities of the hospital: software systems developed by outsiders, lack of resources (not enough computers to practise on), lack of staff (lack of trainers, lack of colleagues to replace workers being trained). As a result, workers are often forced to adapt and train themselves or with the help of colleagues.

Digitalisation has led to a blurring of the boundary between private and professional life in two ways: first, the development of employment platforms (that publish job offers or assignments to boost understaffed services) accessible to hospital workers already in a post, without any real supervision of their overall working time; second, people being called back to work through their smartphone, especially via messaging applications and Whatsapp groups.

Section 2.4 Overall sectoral cross-cutting conclusions

All three sectors have experienced a large growth in digitalisation since the 2010s. Digitalisation takes many forms ⁽⁴⁴⁾. In particular, the **working time spent on tablets, computers and smartphones** (sometimes simultaneously!) **has boomed** in the last few years.

In terms of work content, developments have varied significantly between occupations, but some important changes have taken place since the introduction of new digital processes/software/tools. New tasks (for instance related to software applications) have been added to existing jobs, which now regularly include administrative and data entry tasks (reporting for example), increasing the workload. In the electricity and the hospital sectors, digital planning of the day and digitalisation of files enables optimisation and segmentation of tasks; each task is associated with a specific time and contingencies are not included. **Work intensification is observed in many jobs/professional positions** in the three sectors. **In all sectors, social and hierarchical ties have been loosened by the use of communication channels** involving e-demands, e-mails or smartphones and are detrimental to general relationships between employees. Direct and physical interactions have fallen very significantly, which has an **important impact on work teams**.

'Digitalisation entails a systemic change of paradigm, concerning not only the tools, but also, deeply, human interactions (way of working, way of thinking)' (INT2).

In all sectors, the rather **high cost of digitalisation** in all sectors to the benefit of consulting firms has resulted in a **significant multiplication of software applications**. **Serious inefficiencies of the software used** have been emphasized, notably due to recurrent problems of interconnectivity (between different software systems), development problems and to a lack of employee participation in their implementation:

'In the context of a happy 'digitalisation' serving the well-being of humankind which controls it, it is essential to support the deployment of digitalisation and to regulate it through social dialogue' ('Europe' project manager, UFFA-CFDT).

44. In the electricity sector, these include digital work orders, employee's digital administrative record, virtual reality, scheduled maintenance, voice servers and telephone dispatchers, computers, tablet computers, smartphones, large number of software systems and business applications, teleworking, etc. In the public administration, they include business applications, teleworking, online training, remote connection (access), optical fiber, user-web side /agent-web side for administrative formalities, development of (open-souce) big data, digital spy devices, limited-access (for agents and users) 'social' network, internal network (agents), 'chat' tools for agent and users, etc. In the hospital sector, they include electronic prescriptions, computers, digital imaging, biology and anatomical-pathology results, computerised and interoperable patient records, resource scheduling and patient agenda, etc.

Digitalisation is also often associated with physical and/or mental problems in the sectors. While teleworking can have a positive effect on employees' working conditions, the digital devices/processes/tools implemented in the sectors regularly have negative effects due to work intensification (increased workload and pace of work), mental workload, workers' isolation and stress.

Finally, career prospects and employment security are challenged by digitalisation. In the public administration and electricity sectors, digital tools and devices seem often to be used with the objective of productivity gains and to reduce the workforce (substitution effect). In the public hospital sector, digitalisation contributes to an 'attachment loss' vis-a-vis the civil service, and partly explains the difficulties with career development, creating forms of professional insecurity.

In short?

A quote from a trade unionist may sum up the research: 'There is a lack of joy in the digital space' (Int5). Indeed, in a nutshell, our research results suggest that human presence is key for fluid and acceptable use and development of digital tools/process. From this perspective, digital devices are complementary to rather than a replacement for workers, and it is very important to avoid rigidity/constraints/adverse effects potentially created by algorithms/digital applications. Finally, by definition, in the public service sector, the values of service and humanity are central!

Section 3. DIGITALISATION AND SOCIAL DIALOGUE

Section 3.1 Introduction: contextualising the national system of industrial relations

3.1.1 Structure of social dialogue and collective bargaining in France

In France, employers' and workers' representatives traditionally hold an important position in the labour regulatory framework, notably through joint governance of various social protection organisms and through their active role in the regulatory role of collective bargaining (Sénat, 2021). Branch-level bargaining defines the general framework for work organisation and provides guarantees (minimum wage levels, *etc.*) for the branch. The State involvement ensures that this is then mandatory for all firms in the sector (through the 'extension procedure').

In the private sector, collective bargaining covers both mandatory and optional topics. At the firm level, collective bargaining may take place between shop stewards (bargaining is a prerogative of trade unions ⁽⁴⁵⁾) and the employer on the calendar, topics and frequency of bargaining. By default, the employer is required to organise collective bargaining (at least) every four years in enterprises with more than 50 employees on: (i) remuneration, wages, working time and distribution of the added value produced by the firm, and (ii) professional equality between women and men (including measures aimed at reducing pay gaps, and quality of working life). Firms with more than 300 employees should also organise negotiations (at least) every four years on employment and career path management (*Gestion des emplois et des parcours professionnels/GEPP* ⁽⁴⁶⁾). There is no specific obligation to negotiate on digitalisation and its consequences in the company ⁽⁴⁷⁾, or on the 'right to disconnect'. Yet, bargaining initiatives on these topics can be conducted at company level, such as the first innovative agreement concluded by *Orange* in 2016 ⁽⁴⁸⁾.

At the branch/sectoral level, collective bargaining should take place every four years, notably on: (i) wages, (ii) measures related to professional equality between women and men and possible catch-up measures, (iii) implementation of tools against sexual harassment and sexist behaviour, and on related measures, (iv) working conditions, employment and career path management, and on the acknowledgement of exposure to occupational hazards, (v) professional insertion of disabled workers, (vi) priorities, goals and means ensuring the vocational training of employees. In addition, every five years at this level, collective bargaining must take place on (i) the necessity to update professional equality between women and men, and (ii) implementation of

45. Please note that works councils as consultative bodies have rights of information-consultation but do not normally have the capacity to negotiate and conclude collective agreements.

46. Literally, Employment and career path management.

47. Nevertheless, there are some related information-consultation rights, that we present at the end of this section.

48. 'Premier accord portant sur l'accompagnement de la transformation numérique à Orange', agreement signed on 27 September 2016.

an inter-company savings plan when no agreement has been concluded on this issue. Specific collective bargaining must also take place on the arrangements for part-time work when one third of those employed in the sector holds a part-time job.

There is a complex interaction between the law, industry-wide collective agreements and company-level collective agreements, confirmed by the Law of August 2016 (*El Khomri Law*), which gives precedence to certain collective bargaining areas at the company-level, although in practice, the scope of this law is relatively small (Radé, 2017). Typically, a collective agreement (branch- or company-level), can provide more favourable conditions than those in the law, but if those in the law are more favourable, they will apply. Now, since the new Law from 2016, company-level agreements have precedence over sector-level agreements, with notable exceptions (minimum wages, employee classification, professional equality between women and men, additional guarantees). There are some domains, moreover, in which there can be no derogations from sector-level agreements, if such exist: prevention of occupational hazards, professional integration, workforce size for trade union delegates, bonuses for dangerous work (Miné, 2017).

At the company-level in the private sector, the work councils have information-consultation rights. The labour code stipulates that the social and economic committee must be *'informed and consulted (...) on the introduction of new technologies, all important rearrangement modifying health and safety conditions or working conditions'*. The introduction of a new technology also requires recourse to external expertise. Consultation means that the works council issues an opinion within a certain time limit. This opinion is non-binding, *i.e.* there is no obligation to follow the opinion issued by the workers' representatives.

In the public sector (public administration and (state) hospitals), a decree states that technical committees ⁽⁴⁹⁾ are consulted on questions and draft texts related to 9 specific topics, including the issue *'of technological developments and the working methods of administrations, facilities or services and their impact on the staff'*. Consultation is required *'each time that the evolution of technologies or working methods results in changes of the agents' working and labour conditions'*. It is yet to be seen how this consultation evolves with the transformation of technical committees into social committees.

The present report focuses on three sectors providing public services: the electricity, public administration, public and private hospital sectors. The first sector was subject to specific rules related to its previous public status until 2000. For the public administration and the (public)

49. Note that these CT/Technical committees will be replaced in late 2022/early 2023 by the new Social committees, merging the CT with the existing CHSCT/Health and Safety at Work Committees (similarly to what happened in the private sector – please refer to section 3.4.1 for more details).

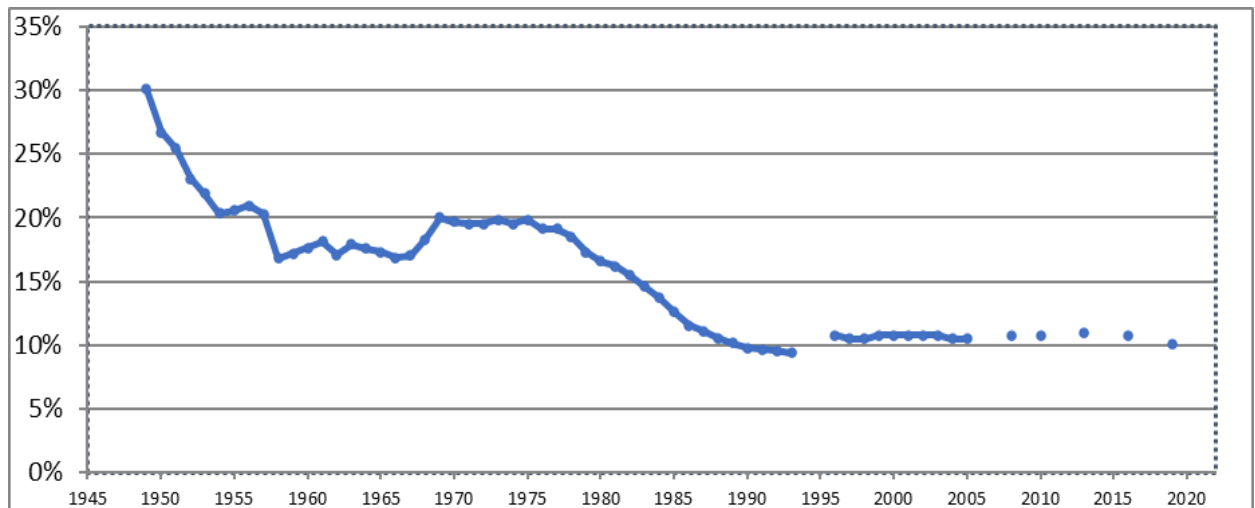
hospital sector, the specificities of public sector collective bargaining (state, local authorities, hospital) normally apply ⁽⁵⁰⁾: these rules are presented in section 3.4.1: see *infra* (Collective bargaining in the *[public administration]* sector).

3.1.2 Quality of social dialogue

In general terms, the report by Combrexelles (2015) underlines that while France has implemented various legal reforms since the early 2000s related to social dialogue, these have failed to significantly enhance collective bargaining. Indeed, a rather stable (and good) level of bargaining is observed at the sector or company level. In addition, on the qualitative side, the report's assessment is that 'socially innovative agreements' are rather rare: this notably comes from an employer's vision of collective bargaining as a constraint or a cost, while workers' representatives consider bargaining to be difficult in a crisis context. This report insisted at the time on the need to give more space to bargaining (at the sector- or company-level). It strongly influenced the law adopted in August 2016 (and mentioned before).

Yet, years later, and despite healthy annual collective bargaining (*e.g.* Dares, 2021), social dialogue is often judged to be deficient or patchy in France. This is due to various factors: *(i)* a long-standing culture of conflict: strikes are seen as a normal way to balance the power relationship to the benefit of trade unions, and employers find it hard to consider collective bargaining as anything beyond a legal obligation (Sénat, 2021), *(ii)* a persistent weakness and low unionization rate, which amounts to around 10% in the early 2020s and may undermine trade union legitimacy and influence (see Graph 4). Unionisation is moderate in the public sector (at around 20% - higher than in the private sector), with the highest rate (23.1%) in the state public services (public hospitals and local/regional authorities: 15.6% and 14.1%).

50. Please note that there are some notable exceptions in the public sector. For instance, the Public employment service (*Pôle Emploi*) is an administrative public body and so is governed, in principle, by state law. Yet, lawmakers have decided that the employees of *Pôle Emploi*'s are governed by private law (Sénat, 2011).

Graph 4. Unionisation rate in France (1945-1919)

Source: Dares, Ministry of Labour.

3.1.3 Some developments since the 2017 *Ordonnances Travail*

The 2017 'Macron' decrees (*Ordonnances Travail*, or '*Ordonnances Macron*') have also made numerous changes to the Labour Code regarding worker representatives. These decrees, reflecting a strong wish to strengthen social dialogue at the firm level, made significant changes to the structure of worker representative bodies (in the private and public sectors). In the private sector, these decrees in practice reduced the number of employee representatives at company level and the hours worked by union delegates, reorganised the Works Councils (as well as doing away with the separate CHSCT, *Health and Safety at Work Committee*), and reduced or did away with the role of 'proximity' employee representatives. There was thus a shift from the old *Comités d'entreprise* (Works Councils) to the new *Comités économiques et sociaux* (Social and economic Committees). Overall, this often resulted in a significant drop in resources for the worker representatives. The first results of on-going evaluations of the decrees showed that, while more company-level collective agreements have been concluded (linked to new modalities for implementing changes in legislation), they have not given new momentum to social dialogue at the company level. Nor have these reforms resulted in more widespread or effective social dialogue (Comité d'évaluation des ordonnances travail, 2021). French trade union confederations share similar opinions on the effect of the reform of the works councils, strongly criticising the impact they observe on social dialogue, as they stated in early 2022. For instance, CFDT considers that a 'narrow vision' of social dialogue has been implemented, resulting in further centralisation of this dialogue, a weaker link between the local workplace and representatives, minimum-level provisions in the agreements, and more difficult and busier work for employee representatives. CGT also considers that industrial relations have been diluted and rationalized, that collective guarantees have been weakened, that the (previous) works councils have been strongly centralised, and that local representation of employees has been abandoned. Note that

in the public sector, similar changes will be made in late 2022/early 2023 to the Technical committees (the equivalent of works councils in the public sector). We present these changes in section 3.4.1.

3.1.4 Representativeness of trade union confederations

We described above the long-standing and persistent weakness of unionization in France, with a rate of less than 10% in the early 2020s. Yet, it is important to note that the rate of unionization is traditionally much higher in the public services, even twice as high *i.e.* around 20% (source: Ministry of Labour).

In the period 2017-2020, the representativeness of trade union confederations can be expressed through the concept of *audience syndicale* ('trade union influence'). This *audience* focuses on the ability for a trade union to sign collective agreements; to do so, at national, cross-sectoral (interprofessional) and sectoral level, a particular union must represent 8 % of the votes cast. At the national and intersectoral level, five trade union organizations currently meet this criterion: CFTD (26.77%), CGT (22.96%), FO (15.24%), CFE-CGC (11.92%), and CFTC (9.50%) – (source: Ministry of Labour).

3.1.5 The scope of collective bargaining on digitalisation is limited to teleworking

At the national level, digitalisation is not yet a standard topic for collective bargaining, with the notable exception of teleworking. Before or after the beginning of the sanitary crisis, the main French trade union confederations had an opportunity to specifically present their views on teleworking, a tool that has been extensively used since then (*see next sections for their positions on this type of work organisation*). A first national cross-sectoral framework agreement had been concluded in 2005 on teleworking. More recently, the 2017 reform of the Labour Law ('les ordonnances Macron'), stipulated that regular teleworking should be organised through a collective agreement or a specific Charter written by the employer. In November 2020, a new national cross-sectoral framework agreement on teleworking was concluded, which reaffirms previous principles but fails to address certain features more precisely (such as, for instance, defrayment of the costs/allowance of teleworkers). It is important to note that the 2020 framework agreement on teleworking was initially non-binding. Yet after its extension (with a qualification on professional expenses) in April 2021, its provisions become mandatory *within its scope of implementation* (*i.e.* in all companies belonging to a sector represented by MEDEF, CPME and U2P employers' organisations).

Teleworking seems to be an area of digitalisation that is managed quite well by trade unionists, as shown by the numerous negotiations that have taken place in the last decade: *'We have acquired some expertise, and the introduction of teleworking often allows us (at last) to dialogue*

with the employers on work organisation, a domain in which it is often difficult to enter into dialogue with our employers (in France at least)' (Project manager ⁽⁵¹⁾, UFFA-CFDT ⁽⁵²⁾).

Section 3.2 Trade Unions' position on digitalisation at national level

3.2.1 A brief review of collective works drafted with the participation of trade unions

Some collective reflections (with the participation of trade unions) on digitalisation have been set down in the well-known Mettling report (2015) or in other collective works, such as a recent study put together by the French association *Réalités du dialogue social* (2020).

Produced at the initiative of the French Ministry of Labour, the Mettling report (2015) was drawn up with the participation of employer and worker representatives as well as other experts and focuses on the impact of digitalisation on working conditions, labour organization and management. The Mettling report underlines some major impacts of digitalisation: the widespread use of digital work tools, impacts on all skills (with new skills) and all jobs (some will disappear, some new ones will appear), the work environment of managers and new forms of employment. The report delivers the following key messages: (i) there is an urgent need for a shared diagnosis regarding the adaptations to be implemented for digitalisation; (ii) these adaptations must be limited to what is needed to ensure a successful digital transition; (iii) the need for tailored adaptation of the legal framework; (iv) the importance of avoiding a digital divide (unfavourable to small and medium companies); (v) the need for changes to health policy, given that intensification of work and (digital) connections can lead to important risks to a 'balanced' life, and to good health.

A recent reflection on the impact of digitalisation on social dialogue was recently conducted by representatives of trade unions and businesses as well as experts, organised by the French association *Réalités du dialogue social* and summarised in a recent report (*Réalités du dialogue social*, 2020). The study focuses notably on new practices and new interpersonal relationships triggered by digitalisation. In particular, the forms of social dialogue between company management and trade unions have partly been changed by the use of new tools, offering new possibilities and challenging older ways of working. There is often a clear need to adopt certain

51. We did not conduct a regular full interview with this contact. Nevertheless, he has been kindly willing to share some views and perspectives on digitalisation by phone and by email, notably giving recommendations of names of stakeholders at the national and European levels (see also section 4).

52. UFFA or *Union des Fédérations de Fonctionnaire et Assimilés* (CFDT), Union of federations of civil servants and assimilated employees (Public sector). UFFA is made up of ten CFDT federations representing state employees with civil servant status in the 3 public 'functions' (state, local authorities, hospital sector).

digital tools, while some collective agreements already establish digital practices and tools linked to social dialogue. Yet, again, a serious lack of follow-up of collective agreements can be seen, despite the (administrative) requirement to notify such agreements. The study observes that industrial relations are only partially digitalised and that in practice, the partners in social dialogue do not really fully trust the digital tools. Although the potential for improving social dialogue is far from being fully exploited, all actors recognize that a 'digitalised relationship' is no substitute for dialogue (notably, the groundwork and face-to face dialogue).

3.2.2 Specific views and positions of the main French trade union confederations

In addition to collective reports, some documents in various formats specifically related to digitalisation and its impacts were made public in the mid-2010s by the main French trade union confederations (CFDT, CFE-CGC, CFTC, CGT, FO).

The point of view of CFDT - *Confédération française démocratique du travail*⁽⁵³⁾

In one quite recent document, CFDT (2016) underlines various important points:

- There is no consensus on the effect of digital technologies on growth, yet CFDT considers that they enhance collective well-being (by promoting new services).
- As many jobs may change through digitalisation, job losses could happen not only in low-skilled occupations but also in skilled ones, which may also result in increased polarisation of employment and wages. New jobs could also be generated by new practices, hence the net effect on employment is still uncertain. In any case, it is vital to ensure adaptation and training in tomorrow's jobs.
- The impact of digitalisation on the public services must be considered: the civil servants' views are ambivalent, with worries about employment (productivity gains, pressure on the workload, reporting tools) as well as high expectations of solutions to help them in their daily work. CFDT considers that tailored digitalisation could help to deliver high-quality public services.
- The digital transition is profoundly changing the French model of social protection. Digitalisation also triggers challenges related to the quality of working life, notably on the need to keep track of the workload, to guarantee the 'right to disconnect', and to ensure the implementation of collective rules through social dialogue.

In another presentation (CFDT, 2015), CFDT also focused on new trade union practices in the use of ICT and considers in this perspective that digitalisation radically transforms social relations⁽⁵⁴⁾. The presentation also underlines that:

53. French Democratic Confederation of Labour.

54. Please note that to our knowledge, CFDT did not express specific views on teleworking in these two publications (CFDT, 2015; CFDT, 2016), but rather, later, notably in a shared statement with CFTC

- ICT is complementary to traditional union practices, notably providing new ways of reaching workers
- New technologies also increase the versatility of activities and speed up some of the existing practices. Digitalisation improves reactivity to economic developments and can also reinforce pre-existing social inequalities in TU actions.
- Some employers are tempted to bypass social dialogue by using digital tools, for instance through 'online surveys' instead of a dialogue process with the trade unions (CFDT, 2016).
- There is a need to adapt communication and training tools to facilitate access to unionism and increase union presence on social media.

The point of view of CFE-CGC - *Confédération française de l'encadrement - Confédération générale des cadres* (55)

A lengthy report by CFE-CGC (2017) deals with various important topics, one of which is a reflection on digitalisation:

- Discussions on digitalisation should focus on the structure of economic activity and on the way to ensure global effectiveness in the general interest, while it is fundamental that people should remain in control of technological progress (subsequent flexibility should be avoided).
- Digital platforms are taking over part of the added value of traditional sectors: they should in consequence pay an appropriate level of taxes, to ensure that the income thus generated is more equally distributed.
- On the topic of teleworking, it is important to strike a balance between freedom to organise one's own work and the need to safeguard work teams. CFE-CGC hence asks for national collective bargaining to adapt the legal framework on teleworking.
- It is also vital to implement specific measures to avoid isolation of workers and to ensure a balance between professional and personal life (notably through an effective 'right to disconnect' and by regular tracking of workloads).
- It is important for work representatives to be able to use the company's digital tools (and in particular, to communicate trade union information through them).
- The impact of digitalisation on work and employment should also be highlighted, and so the possible effect at national and sectoral levels should be carefully studied and preempted.
- There is no such thing as technological determinism, and digital deployment is a key factor in France's future. It is of prime importance to defend the acquired rights of workers.

and UNSA (Union nationale des syndicats autonomes, National union of autonomous unions, largely but not only made up of public sector unions), in May 2020.

55. French Confederation of Managers.

The point of view of CFTC - *Confédération française des travailleurs chrétiens*⁽⁵⁶⁾

In a recent reflection, CFTC (2021) underlines different points:

- Digitalisation should enrich labour (rather than expand it) in the sense that it can free workers from repetitive tasks and reorient them to more creative or relational activities. In this view, CFTC considers that automation and robotics do not necessarily destroy employment and occupations: there can be complementarity between robots and workers, for instance, which can allow upskilling of workers.
- Digitalisation (notably since the pandemic) has changed management and work organisation: this can make some tasks easier yet can also foster a blurring of personal and professional life, and increased workloads, individualization and isolation of workers.
- Digitalisation is a very important subject for social dialogue (teleworking, right to disconnect, etc.). Digital tools should enrich the information available to workers' representatives. It is also urgent to regulate this field to ensure that digitalisation serves the collective interest and that humans remain at the centre of economic activity, through social dialogue.
- CFTC calls for a special national discussion forum to discuss robotics and digitalisation, in order to create a new social contract between employers and workers.The point of view of CGT - *Confédération générale du travail*⁽⁵⁷⁾

A document on the effect of digitalisation CGT (2017) highlights several ideas:

- Digitalisation has the capacity to generate social regression. Indeed, digitalisation contributes to the development of work bodies in which the hierarchical relationship between manager and worker is confused by an 'illusion of autonomy of the worker' and new management conditions. CGT considers that digitalisation increases employee monitoring, notably because it favours continuous evaluation, performance, and productivity.
- Digitalisation increases working time, blurs the boundaries between private and professional life, putting at risk the right to rest, and enhances psychosocial risks, with non-effectiveness of the 'right to disconnect'.
- The consequences of digitalisation on work conditions and organisation are often dramatic.
- Digitalisation also poses a serious threat to employment and could destroy many jobs, a process which would not be balanced by the creation new ones; many (other) jobs are likely to undergo profound changes. As long as employees are protected and given new rights, as well as a better share of productivity gains, digitalisation may work to the benefit of employees.

The same document also reflects on trade union practices in the digital age:

56. French Confederation of Christian Workers.

57. General Labour Confederation.

- It is important to analyse the current discourses which call on workers to adapt to digitalisation, something which does not come naturally. The impact of digitalisation will depend on us and what we do with it (or what we let others do with it), in the sense that digitalisation is also a political issue (contrary to a frequent argument aiming to depoliticise workers, telling them that they have no power over their destiny).
- Regarding trade unionism's vision in the digital age, CGT moves away from the concept of a 'trade unionism 2.0'. The confederation warns against the risks of using technologies (such as corporate referenda) as a means to bypass unions and to create an individual social contract between employers and workers. CGT considers it is important to strike an appropriate balance between digitalisation viewed as a threat versus digitalisation viewed as an opportunity.
- CGT does not aim to change its position but plans to open up to new challenges brought by new/atypical forms of employment (also including unemployed people and workers in precarious employment).
- CGT does not wish to introduce flexibility into union collectives and update them with digitalisation but insists on the importance of collective (union) time, and on the prospect of social struggles and emancipation: productivity gains should entail a reduction in workloads and working time. The use of new digital tools may help to renew union practices if this is done intentionally (with choices made to innovate) and in a combative way (i.e. new virtual spaces are not incompatible with basic practices).

On the issue of teleworking, CGT (2017) insists on the following points:

- This way of organising work creates new social relationships, endangering the traditional status of the worker. It may create work overload, blur the boundaries between professional and private life and result in work intensification.
- Non-formalised forms of teleworking are often common (in time and space: evening, weekend, holidays, on public transportation, etc.).
- There is an urgent need for regulation of teleworking (e.g. implementation of work time slots) and also to limit it to autonomous workers: CGT wishes for a balance to be struck between the 'autonomy' benefit and the risks linked to teleworking: this could take the form of a rotation between physical presence at the workplace and 'external' work.

The point of view of FO – *Force Ouvrière* ⁽⁵⁸⁾

A document by FO (2015) reports that:

58. or 'Blue-collar' Force.

- ICT has generated new work practices that are often poorly managed and regulated. Indeed, digitalisation and ICT shine a light on numerous flaws in the labour law because they aggravate existing phenomena. There is therefore a need for regulation and new regulatory frameworks (notably, regarding a 'right to disconnect').
- It is important for workers to take ownership of digitalisation, to benefit from the related opportunities and to avoid the risks.
- It is important to assess the nature of the jobs threatened by digitalisation, and to reintroduce a collective, human element to companies.
- Teleworking combines benefits (reduction in travel time, better work-life balance) with serious issues or uncertainty related to: the boundary between professional and private life, working time, work organisation, worker isolation, and effectiveness of collective rights.
- Robotics also bring some known benefits, as well as enhancing or generating standardisation of tasks and taylorization of work, which can lead to a loss of worker's identity and autonomy.

3.3.1 Collective bargaining in the sector

Parmantier (2011) explains that for more than sixty years, between 1946 and 2000, social dialogue in the electricity sector took the form of joint negotiations between the general management of EDF and Gaz de France (GDF), which were public and nationalised at the time, and the trade unions, particularly the CGT. During this period, there were no branch agreements. The public authorities, in particular the Ministry of Industry, were very present at the social negotiation table.

In 2000, the law of 10 February 2000 on modernisation and development of the public electricity service set the conditions for opening up the market to competition, and at the same time launched the start of social negotiations at the level of the Electricity and Gas (E&G) professional branch. Thus, employers' organisations⁽⁵⁹⁾ were set up and collective agreements were signed, not only within E&G but also by the representatives of the multiple employers in the branch. Following this renewal of professional relations in the electricity sector, several agreements regarding the status of E&G employees were signed: pension reform, reform of the health scheme, salary negotiations. The status of the E&G branch is still specific: the personnel are not covered by a collective agreement like the other sectors but are subject to the 'National conditions of employment ("Statut National") of the personnel of the electricity and gas industries', created in 1946 at the time of nationalisation.

Parmantier (2011) explains that in 2007, when the sector was opened up to competition, after a year and a half of consultations at the level of the professional branch, the French government

59. L'Union Française de l'Electricité (UFE) et l'Union Nationale des Employeurs des Industries Gazières (UNEmIG).

adopted two decrees intended to modify the system of staff representation in the branch, with the creation of works councils and staff delegates in companies and groups. The notion of companies was thus added to the notion of professional branch. According to Parmantier, the trade union negotiations were thus more concerned with local issues than with political issues. Finally, the opening up of electrical activities to competition introduced legislative (staff representation bodies), normative (IFRS) and legal changes. The tradition of consultation at the top with the trade unions has persisted and has allowed these changes to take place with little social conflict, given the real evolution of social relations in the electricity sector (Parmantier, 2011).

Today, negotiations are still conducted at two levels, at the company level and for the whole electricity industry. This branch includes 157 companies, and almost 93% of these employees work in the companies that evolved from two historical companies: EDF and GDF.

The demands currently being made at national and sectoral level concern the nationalisation of EDF, the separation of electricity activities, the calls for an exit from the European energy market and the creation of a 'public energy service' (CGT trade union, see above).

3.3.2 Role and importance given to digitalisation in the national industry-wide agreements

In the electricity and gas industries, the question of digitalisation and its effects on the quality of employment is rarely discussed between trade unions and employers in the sector. The collective agreements signed concern remuneration, social dialogue, social activities, pensions, training, family rights, *etc.* Since the 2000s, only one branch-level agreement has been signed in this sector: an agreement on the prevention of psychological risks signed in 2010, which only very slightly addresses the effects of digital technology on mental health. There are no agreements in the electricity and gas industry on the right to disconnect, teleworking⁽⁶⁰⁾ or other subjects related to digitalisation.

However, the demands of the national federations on the subject of digitalisation and its effects are numerous. According to INT10, the CGT trade union is demanding a right to disconnect and a fixed boundary between private and personal life. According to INT8, the CFE CGC trade union is particularly vigilant about psycho-social risks, the balance between personal and professional life and the right to disconnect, as well as about situations of isolation.

In the companies in the sector, a few agreements on digital technology have been signed:

60. A telework agreement was signed at cross-industry level (all private sectors) in 2020.

- At EDF, the TAMA agreement (working differently, managing differently) sets out the new uses of telework, grants new flexibility on working hours, addresses the issue of health and safety and the work collective, attempts to improve the efficiency of meetings ⁽⁶¹⁾, allows working to be carried out directly on the sites, makes employees themselves responsible and reduces the importance of the hierarchy in the organisation. According to EDF's management, 'this agreement promotes health and safety with shared vigilance on new induced risks and a balanced and controlled use of digital technology, the perpetuation of innovative social dialogue methods and the development of less carbon-intensive mobility solutions'.
- EDF also has a 4-year social agreement (2022-2025) that provides a framework for the right to disconnect, training and support related to the introduction of digital tools. This agreement introduces working groups, preventive communication and pilots who are in contact with users of digital tools and designers so that the designers adapt the digital tool to the users. Other agreements signed at EDF level includes support for change and the development of professional careers.
- At ENEDIS, there is also an agreement on teleworking (2021) and another on the right to disconnect (2022). The latter agreement stipulates that managerial requests cannot be made outside working hours. Indicators showing the volume of e-mails exchanged during working and non-working hours, by unit and by area, are communicated each month to the units and to the trade unions. No tools to defend this right are provided by the agreement (i.e. days without emails, no access to servers after a certain time) but rather a pedagogical approach steered from the local level.

In practice, despite the agreements, few measures have been implemented to mitigate the negative effects of digitalisation on employment. Only 24% of respondents to the DGQS state that a charter of good practices on digital tools and teleworking has been introduced, only 13% of respondents state that the physical office environment has been improved (chairs, desks) and only 16% of respondents declare that the employer has set rules on the right to disconnect.

Despite these few agreements signed at company level, the interviewees underline that at company level the issue of digital technology is rarely discussed in the ESC (economic and social committee), unless it has a formal impact on working conditions ⁽⁶²⁾. However, there have been debates in the (old) CHSCT (health and safety committee, now CSSCT) at local and national level at EDF on the effect of digital technology on employees' health, following the publication of the results of the MyEDF digital survey (INT 8)). According to the DGQS, fewer than a third of employees say that trade unions and employees have been informed and consulted on the

61. This improved efficiency of meetings requires a time frame with an obligation to report back and draw up an action plan at each meeting.

62. If the new technology/IT process has such an impact, there is a specific procedure, and a consultation takes place in the Economic and social committee.

strategy, implementation and reasons for implementing digital tools. *'In the end it is always management that decides'* (INT9).

Generally speaking and according to INT10, INT8 and INT9, there is no co-determination in the choice of whether to introduce new digital tools or methods at ENEDIS and EDF. *'The unions are not at all involved in the digital strategy'* (INT8).

3.3.3 Trade union approaches and priorities for the collective bargaining agenda on digitalisation

Even though information, consultation and negotiations on the subject of digital technology are rather limited, some issues are discussed in the social dialogue at company level. These topics are part of the social agenda of the trade unions. One of the most important negotiation topics for ENEDIS and EDF unions is the issue of working hours.

The revision (generally downwards) of the 'time ranges' database by the management has had major effects on the daily life of the technicians (as we have seen previously, on their work rate, pressure and stress, pace of work, working time, with the associated psychosocial risks). As INT6 points out, if the management wants to update these time ranges the issue generally goes through the employees' representative in CSSCT (new health and safety commission) and ESC. When these negotiations are launched, the unions ask for some time to build up their own 'time ranges' database by surveying a sample of staff. In concrete terms, according to INT6, the union asks employees how long it takes them to change/repair Linky meters (depending on the model, there are three Linky meters, so three ways of changing the meters). On the basis of the interviews with the employees, the unions try to obtain detailed information in order to show managers/directors that these tasks actually take longer, and depending on the tools used (type of Linky meter). Then there is a 'concertation' phase, during which management and unions try to strike compromises on these times. The national experts propose limited times based on new technical tools that would make it possible to go faster. The results of the trade union surveys are often very different from the times proposed by management. According to INT8, there have already been conflicts during the process.

In addition to negotiations on time ranges, the trade unions have proposals and priorities for mitigating the effects of digital technology on job quality:

- Ex-ante or anticipatory approach: several interviewees point to the need for evaluation and anticipation of digital tools and their impact. According to INT10, the purpose of the new tools introduced must be questioned. According to INT7, companies must carry out an impact study on the effects of new digital tools on the organisation of work (by profession and by age). INT7 also calls for more transparency and reporting to employees. According to him, 'anticipating enables social acceptance'. This anticipating would make it possible to

evaluate the efficiency gains of the tool as well as its effects on employment. These gains, thus evaluated in advance, could then be redistributed in monetary form or in the form of quality of working life. For example, the next digital tool implemented at ENEDIS, called Racing, is to be installed at the end of 2023: it will help to manage the engineering aspect in the company. Thanks to this tool, the management expects to 'save' 108 full-time jobs. The unions want to use this time saving, not to cut jobs, but to improve the quality of working life and avoid the risk of overwork.

- Ex-post approach to job reclassification: INT6 explains that the unions' priority, if job cuts linked to the introduction of a new digital tool are unavoidable, is to negotiate compensatory measures and retrain staff. For example, INT6 explains that the data entry officials who had been replaced by computers had been trained, broadening their skills. Before, they just executed tasks, today they are supervisors. But INT6 notes that in practice, the increase in skills is often 'done' in parallel with job cuts.
- 'We are in a situation where digital technology destroys jobs but allows those who remain to increase their skills, thanks to the joint action of local managers and the unions. The unions must anticipate career paths in response to the deployment of digital tools' (INT6).
- Another priority for the unions is legislative change. In view of the risk of digital Taylorism and the impact on occupational health and safety, the unions (INT6) and INT8 are asking for burnout to be classified as an accident/occupational illness. 'The digital world is a first category generator of burnout' (INT6).

3.3.4 Conclusions on the sector

- **Within the Electricity and Gas industry, the trade union federations voice many demands and negotiation activity is intense.** Indeed, the tradition of centralising social dialogue at the top, introduced at the end of the war, has continued.
- **Numerous agreements have been signed** (remuneration, social dialogue, social activities, pensions, training, family rights), **but they are rarely connected to the topic of digitalisation and its effects on employment.** The subject of the digitalisation of work is not, for the moment, a subject for negotiation at branch level.
- **At company level, the topic of digitalisation is more often discussed.** The two key companies in the sector, EDF and ENEDIS, have signed agreements on teleworking and on the right to disconnect, as well as social agreements that address and set out general principles regarding certain effects of digital technology on work. Nevertheless, with the exception of some key negotiations (negotiations on working hours), social dialogue on this subject is very limited. Co-determination is totally absent and consultations in the CSE are rare.

Section 3.4 Public administration sector

3.4.1 Collective bargaining in the sector

In the public sector in general ⁽⁶³⁾, collective agreements are negotiated at the national level (for the three public 'functions', or within a given public function) or at local level (decentralized services, local authorities, public institutions, etc.), except for wages (which are negotiated at the national level). Negotiated agreements may correspond to framework agreements, *i.e.* they may be transformed into 'local' agreements (for example: ministries) or through action plans specified at governmental level. In the case of local agreements, specifications or better provisions must be included (otherwise, the rules in the Framework agreements apply). An 'agreement on method' can also be concluded before the beginning of the negotiations. In general terms, in the public sector, an agreement must be published by the employer to be valid.

Until 2011, collective bargaining in the civil service only applied to wages. The Bercy agreements (2008) aimed to renew public sector social dialogue, and have led to the law of 5 July 2010 on social dialogue in the public sector. This 2010 law has since opened up collective bargaining to many other possible subjects (work organisation, training, *etc.*), yet without any obligation. This 2010 law has also introduced the rule of majority agreement, which did not exist before.

In the public sector, the joint consultative bodies have been undergoing major changes, similar to those implemented in the private sector (see 3.1.3). Indeed, the law of 6 August 2019 makes changes to the civil service social dialogue bodies. The *Comités techniques* ⁽⁶⁴⁾ or technical committees (equivalent to the Social and economic committees in the private sector) will be merged with the 'Health and Safety at Work' Committees (late 2022/early 2023). In order to expand the number of collective agreements in the public sector, law 2019-828 of 6 August 2019 foresees a future specific decree (*ordonnance*) on collective bargaining (see hereafter).

It is important to note that provisions in the collective agreements applying to the civil service were not binding until recently: the 2021 decree (*ordonnance*) n° 2021-174 (17 February 2021) has now changed this: these agreements '*will not be a moral commitment but will have binding force*'. This 2021 decree aims to enhance social dialogue in the public sector, notably by

63. It is important to note, once again, that these features of collective bargaining in the public sector cover two sectors examined in this study: the public administration, and (public) hospitals.

64. Note that there are two other joint bodies in the public sector: the *commissions administratives paritaires* (CAP, or joint administrative commissions) and the *Commissions consultatives paritaires* (CCP, or joint consultative commissions), which are bodies which discuss careers and the follow-up of contracts, for permanent officials and contract workers respectively. These joint bodies include some elected employee representatives and will also change scope/content, starting in 2023.

extending the scope of collective bargaining as well as allowing a 'trade-union right of initiative' to call for negotiations to be launched on a particular topic.

In the public sector, psychosocial risks have been a topic of collective bargaining, which resulted in a framework agreement (22 October 2013), specified through a governmental implementation plan in 2013. Yet digitalisation was not a subject discussed through collective bargaining until the 2021 framework agreement on teleworking, which applies in the three public 'functions' (July 2021).

INT4 reports that until recently, no real collective bargaining was possible in the public sector: *'framework agreements were only framework by name'*.

INT1 also recognizes that despite weak signals in the last 4 or 5 years as to the need to discuss digitalisation, it has not been the subject of any collective bargaining.

3.4.2 Role and importance given to digitalisation in the national industry-wide agreements

As underlined before, digitalisation is not a recurrent topic of collective bargaining in the civil service, although digitalisation as a topic was and is becoming increasingly significant. The only exception is the Framework agreement on teleworking of 13 July 2021 ⁽⁶⁵⁾, relative to the three public 'functions' (i.e. state, local authorities, hospital sector). This agreement notably limits teleworking to three days a week (with some exceptions) and contains provisions related to private life (right to disconnect, teleworking in 'third places', prevention of domestic violence). Some implementing decrees have yet to be released (for instance, related to the defrayal of teleworking costs).

INT1 (UFSE-CGT) explains that digitalisation is not a topic addressed through other collective means or initiatives (direct participation, info-consultation) in the public administration. Other interviewees underline similar findings. For instance, INT4 (CFDT Interco) also finds that 'officials [or their representatives] are never consulted, as 'this is a basic principle in the administration [sic]'

3.4.3 Trade union approaches and priorities for the collective bargaining agenda on digitalisation

Regarding UFSE-CGT level, INT1 relates that work is being done on two areas related to digitalisation:

65. https://www.legifrance.gouv.fr/download/pdf?id=8dD3wEzkeHMP59Q_y7JrpyvZj44jEoKbW5FqgNLxO1g

- Reflecting and pushing for the creation of a secured and public IT hub (with, notably, secure data transmission, and a videoconference solution).
- Working on safeguards/means to contain the negative effects of digitalisation on physical and mental health.

INT1 (UFSE-CGT Federation) considers that broadly, 'State' trade unions are very interested by the topic of digitalisation, but have no power to initiate discussions and bargain with the State on this point (given the balance of power, although trade unionism is stronger than in the private sector). For instance, they were not able to force a discussion on State management of (office) property, despite the fact that digitalisation has released some 'office space'.

INT3 (CFDT Interco) recognizes that digitalisation is not really discussed at the sectoral or national (confederal) union level: *'It is mainly the European and Worldwide Federations which bring this topic. There is not yet a digital advisor or a national secretary in charge [of this topic]'*. At the confederation (CFDT) level, the main related topic discussed has been teleworking, while INT3 considers that the effects of digitalisation should be more precisely addressed, notably: (i) reconsidering labour contracts, and (ii) taking account of the characteristics of younger generations (who are, in particular, very eager to have more autonomy).

This is confirmed by INT4 (CFDT Interco), who considers that at the federal (union) level, the topic of digitalisation is currently emerging, while at the local level (firm/agency union level), *'there is a lot to do'*. She stresses that too often, the only potentially (harmful) effects of digitalisation considered relate to the right to disconnect or teleworking, there are far more than just these two risks.

It is to be noted that for nearly all (around 95%) respondents to the DGQS, the right to disconnect is essential and should be included in the collective bargaining agendas or the labour legislation (at workplace/sectoral/cross-sectoral levels).

3.4.4 Conclusions on the sector

Collective agreements are negotiated at national or local level (except for wages, which are agreed at national-level negotiations). Framework agreements are reflected in local agreements or implementation plans. The **collective bargaining framework is relatively new**, and its scope has expanded over the last decade.

The law of 6 August 2019 makes changes to the social dialogue bodies in the public sector. It also anticipated the future legal rules to enhance collective bargaining in the sector, later set out in the 2021 decree. **This decree has also extended the scope of agreements**, and provides a **new 'right of initiative' for the trade unions** by entitling them to call for

bargaining on a particular topic. Now, agreements in the public sector are binding! **Yet, digitalisation is not a recurrent topic of social dialogue** in national industry-wide agreements, despite **the rise in issues linked to it** (even 'before COVID-19'), which require a more focused involvement and pro-activism of trade unions on this topic.

The **2021 Framework agreement on teleworking** (covering the three public 'functions') can provide a good basis for renewed bargaining on digitalisation in the public administration. Indeed, there is a need to have more in-depth collective bargaining in a sector which, until recently, has relatively little history or habits of discussing items at a relevant level. Trade unionists should also get used to bargaining and impose new and demanding standards so that workers' rights evolve in line with their needs and the perceived priorities. In particular, there is a real need to anticipate technological change and for a precise diagnosis in a situation with multiple challenges (disruptive potential of digitalisation in the sector, the impact on the end-users of public services, the question of data, etc.).

Section 3.5 Hospital sector

3.5.1 Collective bargaining in the sector

The public hospitals are one of the three public 'functions' (with State and local authorities), which are subject to a common general framework of collective bargaining (see section 3.4.1).

The situation differs for the private hospital sector, which follows the collective bargaining rules applicable in the private sector.

3.5.2 Role and importance given to digitalisation in the national industry-wide agreements

Digitalisation started with some precursor establishments. It was not imposed by law. Responsibility for digitalisation is not centralised and practices are very diverse: some establishments have bought a large number of Microsoft licenses, others have opted for free software, others have equipped themselves with Macs, others have chosen Linux. There were never really any rules. Decisions on digitalisation were taken by the directors or heads of department of the various hospitals. Most of the time, systems were imposed. So digitalisation has not been a topic discussed with the unions, even though they would have liked to do so.

'The only place where it was discussed was when we started to have charters on new technologies. Things were set up in the institutions on their own. We started asking questions about the cost of IT because IT budgets were high and consumed training time and investment. There was never really a discussion about the implementation of IT'(INT11, FO SPS).

Digitalisation was discussed in a roundabout way in the Conseil Supérieur de la Fonction Publique Hospitalière (Higher Council for the Public Service in the Hospital Sector) because the staff representatives in this body were not adequately equipped.

INT11 underlines that the trade unions are not consulted on whether change is advisable except in the institutional bodies, but specified that it is also a question of skills and knowledge: *'When we raise these questions in the institutional bodies, we have engineers who come to present things, so we have little confidence in the analysis of the professionals, especially as most of the time, trade unionists are not their cup of tea.'*

INT12 confirmed this feeling: *'Digital is the sixth continent. It is powerful, easily accessible, with effects on all strata of society. I have the impression that we, trade unions, are always one step behind.'*

3.5.3 Trade union approaches and priorities for the collective bargaining agenda on digitalisation

INT11 reports that the most important thing is harmonisation: common references and common software are needed to transmit information, to have bridges between technologies. This harmonisation will lead to productivity gains. INT12 say that these productivity gains must be fed into the work, otherwise it would be experienced as a tool that downgrades workers. Part of these productivity gains must be recovered in the form of time, by reducing working hours and freeing up training time to develop new qualifications and financial recognition.

INT13 identified three priorities: make an inventory of digitalisation in the hospital and its use, measure the effects of digitalisation on workers' health and identify corrective measures; carry out an assessment of teleworking in hospitals and see how it can be improved, as it is still underdeveloped.

With regard to European support, INT 13 said that it could be used to impose minimum efficiency standards on software, modernise IT equipment and hardware with a new obligation to secure data and standardise software.

INT11 and INT13 would like health professionals to be involved in digital changes. According to INT11, any project should be explained upstream and built with the employees to see what their needs are and what it can bring them. INT13 called for *'trial runs, going to other establishments to see how it works, getting feedback and moving away from management with purchasing groups who go for the cheapest.'*

Digitalisation is disrupting the structure and functioning of trade unions. INT12 said that digital technologies encourage the creation of autonomous professional groups on the basis of a specific issue. Social networks increase their audience and act as a sounding board: *'For example, a friend created a group. In a few days, he had 5,000 followers. Then he joined the CGT. The problem is that these groups end up being exhausted because they rely on one or two people, who are called upon 24 hours a day. It's emotionally draining. It lasts 2-3 years and they end up falling apart. The public authorities give them a place in the negotiations. The people who represent them are received at the ministry.'*

INT11 highlights that the development of digitalisation has made employees more independent in their search for information. This change in behaviour has implications for union action. Workers get information instantly on their phones and read fewer and fewer union communications: *'Young people in particular have different information-seeking behaviour. In addition to young people, staff are increasingly looking for information themselves on the Internet. It is only afterwards that they go to the unions to check things in a way.'*

3.5.4 Conclusions on the sector

Digitalisation has never been a topic discussed with the unions. It was not imposed by law. It started with some precursor establishments. It was decided on by the directors or heads of department of the various hospitals.

Trade unions would like health professionals to be involved in the change. Their priorities are the harmonisation of software to ensure that the resulting productivity gains have an impact on their work, an inventory of digitalisation in the hospital and its use, measurement of the effects of digitalisation on workers' health and identification of corrective measures, and ideas as to how to increase telework. Social networks are also disrupting the structure and functioning of trade unions, especially in hospitals, where the use of instant messaging discussion groups is widespread.

Section 3.6 Overall sectoral cross-cutting conclusions

The 3 sectors have some common history but recent differences, which explain the variation in collective bargaining activity

Until the mid-2000s, the electricity sector in France belonged to the public sector, and as such was under the specific collective bargaining framework of this sector (which was at the time very limited in scope). Recently, electricity has become part of the private sector and the scope of collective bargaining in the sector as such has been enlarged: the trade unions make many demands, and there are intense negotiations on many topics (pensions, salaries, workforce and

skills planning, *etc.*). In the public administration and in the (public) hospital sectors, the scope of collective bargaining was very limited until quite recently. Only in 2019/2021 were important changes made to the social dialogue bodies, the scope of bargaining has been enlarged, and public sector agreements have become binding.

Currently, digitalisation is a relatively minor topic of collective bargaining. In the electricity sector, the two main companies (EDF, production; ENEDIS, distribution), have concluded very few agreements related to digitalisation. The only exceptions are on: the right to disconnect, teleworking, monitoring the effects of teleworking and digitalisation. Neither is digitalisation a recurrent topic of social dialogue in the (public) hospitals and public administration: the only national (framework) agreement concluded on the topic in the public sector is the 2021 agreement on teleworking.

Digitalisation has many effects on the quality of work, reflected in trade union demands on these issues: **this calls for an intensification of social dialogue and collective bargaining on the topic of digitalisation in the sectors.**

Section 4. RECOMMENDATIONS TO NATIONAL AND EU STAKEHOLDERS

Section 4.1 Recommendations to national stakeholders

The implementation of new digital tools or approaches must be led by co-construction with workers (who are often the final users). This would prevent top-down only approaches, disconnected from the field. It would enhance the relevance of the tools implemented, and their acceptance. Face to face training must be planned for all new implementation of tools and approaches. **An impact assessment on employment must also take place before the implementation of new tools.** There should be a systematic review of implementation (communicated to the officials/employees) conducted by a monitoring committee. Account must be taken of the anticipated impact on skills and career paths.

In terms of IT devices, various suggestions have been reported for the public sector: (i) **Creating a secured public IT hub at national or sectoral level** to benefit workers (implementation of common digital tools, in particular software, national public Cloud, remote access, videoconferencing), (ii) **Improving the harmonisation of digital software between administrations, or within a given administration,** (iii) **A general reflection on data and AI,** which is becoming more and more central (issues of data security, data ownership, the respect of the users' private life). These issues relate broadly to fundamental rights and democracy.

Furthermore, it is also important to promote digital acculturation at different levels, notably by promoting acculturation of political leaders, senior administrative officials (and employers in general) and particularly union representatives, familiarising them with the challenges related to digitalisation. Specially designed training should be provided to remedy any lack of expertise on digitalisation and enable them to catch up. **Support and training of workers and managers is** also important in order to make work teams more effective in a digitalised context.

It is also important to ensure that public services retain a possibility for direct contact between users and officials, or that certain local administrations are reopened, for better inclusion of populations without any access to digital public services or with poor basic digital skills.

It also seems important to monitor the outsourcing/use of (private) consulting firms in the ongoing digitalisation in the public sector, following the recommendations in a

related recent EPSU report (Weghmann and Sankey, 2022) ⁽⁶⁶⁾: change of position of the public sector in general (generally seen as less attractive than the private sector), question of data (who manages them, where are they stored, etc.), the high costs incurred should also be questioned. In general terms, (public) employers should carefully consider future/past developments (including possible alternatives) when they outsource services to private partners.

Productivity gains provided by digitalisation in the public sector should also be redistributed, mainly to improve the quality of working life and of services to the users, and not to reduce employment.

In terms of social dialogue and collective bargaining, it seems paramount to increase, significantly, **information-consultation on digitalisation in the bodies representing employees**. It is important to **go beyond a merely 'formal' social dialogue** (need for good will among the parties, need for a change in the level of collective bargaining, need for stakeholders to change their perceptions). More generally, a **permanent social dialogue** on digitalisation is becoming essential, if we are to adapt to **a context of rapidly changing technologies**. It is also vital to extend collective bargaining on digitalisation beyond the topics of 'teleworking' and the 'right to disconnect'. Open and direct **discussion of the impact of digitalisation on productivity gains and their distribution** (and the link to work quality) should take place between trade unions and the public employer. It is equally important **to enable trade unions to negotiate the set time prescribed for a given task in jobs where this applies**, as this significantly reduces autonomy and increases control. **Finally, various trade unionists have also proposed that the new diseases** linked to digitalisation (such as burnout) **be included in the list of recognized occupational diseases**.

Section 4.2 Recommendations to European stakeholders

A European (pre) agreement on digitalisation for the central and federal government was reached in June 2022. This agreement will be signed on 6 October 2022 and will have to be transformed into mandatory legislation:

'If the Commission agrees to a legislative implementation, it will provide some 8 million workers and civil servants with new or stronger protection on telework, the right to

66. In the own words of the authors of the report: *'The drive to digitalise public administrations poses a further risk that private sector involvement in public administration will increase'* (p.3). Their proposals include the following: (i) inhouse alternatives need to be thoroughly examined, (ii) consultation with relevant stakeholders, in particular trade unions, in advance of any outsourcing, (iii) When services cannot be provided inhouse, it is important that much stronger standards are set for tendering, bidding and contracting.

disconnect, training, health and safety, personal data, outsourcing and human-in command artificial intelligence'(EPSU, 13 July 2022 ⁽⁶⁷⁾).

We consider that this European agreement on digitalisation, covering various topics related to digitalisation (and not limited to teleworking) **should then be extended** beyond the central administration, and **to all public and private sector officials or employees** providing a public service, in order to raise the level of protection in relation to digitalisation in Europe. The goal of greater adaptation of working conditions (in the broader sense) in the 'public/civil service' to digitalisation is of key importance.

Social Europe is still to be built in regard to digitalisation. European trade unionists should intensify their involvement and increasingly weigh in on this topic at European level, and, in cascade, at the Member States level. This seems essential if digitalisation is to benefit humankind in general and workers in particular.

67. Cf. the public statement by EPSU at <https://www.epsu.org/article/eu-social-partners-adopt-agreement-digitalisation-central-and-federal-government>

Section 5. REFERENCES

- Amado G., Bouilloud J.-Ph., Lhuilier D. and Ulmann A.-L. (2017), *La créativité au travail* [Creativity at work], Paris: Eres.
- Arntz M., Gregory T. and Zierahn U. (2016), 'The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis, OECD Social', Employment and Migration Working Papers n°189, OECD Publishing, Paris.
- Batac J. and Maurel C. (2020), « La face cachée de la digitalisation dans les collectivités territoriales » [The hidden face of digitalisation in local authorities], *La Gazette*, 10 June 2020.
(<https://www.lagazettedescommunes.com/682795/la-face-cachee-de-la-digitalisation-dans-les-collectivites-territoriales/>).
- Berger T. and C. Frey (2016), 'Structural Transformation in the OECD: Digitalisation, Deindustrialisation and the Future of Work', OECD Social, Employment and Migration Working Papers, No. 193, OECD Publishing, Paris.
- Beuve O., Cristofini O. Gimenez J and Porcher S. (2021), « La transformation digitale du secteur public. Atteindre les promesses et éviter les désillusions » [The digital transformation of the public sector. Achieve promises and avoid disappointment], les Policy Papers de la Chaire EPPP, N° 6, janvier 2021.
- Branche-Seigeot A. (2015), « Compétences individuelles et compétences utilisées en situation de travail. Quels constats ? Quelle valorisation salariale ? » [Individual skills and skills used in the work situation. What findings? What remuneration ?], Document d'étude de la Dares, n°193, septembre 2015.
- du Castel V. (2018), « Entre processus de normalisation et durabilité de l'information digitale, vers une nouvelle dépendance à la faveur de l'énergie numérique » [Between standardization process and sustainability of digital information, towards a new dependence on digital energy], pp. 98-115, in Liquète V., Mallowan M., Marcon C.. (2018), *Processus de normalisation et durabilité de l'information. Revue COSSI : communication, organisation, société du savoir et information*, n°5/2018.
- CFDT (2015), *Nouvelles pratiques syndicales et usages des TIC* [New trade union practices and uses of ICT], Rapport final, Agence d'objectifs de l'IRES, Décembre 2014.
- CFDT (2016), *Transition numérique - Analyse de la CFDT* [digital transition - analysis by CFDT], *Nos ambitions*, avril 2016.
- CFDT, CFTC et UNSA (2020), *Télétravail : Préconisation en vue de la reprise d'activité et perspectives à venir* [Telework: Recommendation for the recovery of activity and future prospects], mai 2020.
- CFE-CGC (2017), *Quelle société pour demain ? état des lieux et perspectives, les propositions de la CFE-CGC pour une société en phase avec son temps.* [What society for tomorrow? inventory and perspectives, CFE-CGC proposals for a society in step with the times].
- CFTC (2021), *Numerique: à quoi ressemblera le travail de demain?* [Digital: what will tomorrow's work look like?], décembre 2021. (<https://www.cftc.fr/nos-propositions/numerique-a-quoi-ressemblera-le-travail-de-demain%E2%80%AF>)
- CGT (2017), *L'impact du numérique sur l'emploi et le travail* [Impact of digitalisation on employment and work], Brochure fédérale N°29, Fédération CGT des Sociétés d'Etudes, Septembre-Décembre 2017.
- Chusseau N., Dumont M., Hellier J. (2007), 'Explaining rising inequality: Skill-biased technical change and north-south trade', *Journal of Economic Surveys*, 22 (3), 409-457.
- Clot Y. (2015), *Le travail à cœur : Pour en finir avec les risques psychosociaux* [Work at heart: To put an end to psychosocial risks], Paris: La Découverte.
- CNFPT (2021), *Les impacts de la transition numérique sur les métiers de la fonction publique territoriale, Volet Prospectif* [The impacts of the digital transition on the professions of the territorial public service, Prospective section], Etude Métiers, octobre 2021.
- Comité d'évaluation des ordonnances travail (2021), *Évaluation des ordonnances du 22 septembre 2017 relatives au dialogue social et aux relations de travail* [Evaluation of the decrees of 22 September 2017 related to social dialogue and labour relations], France Stratégie, décembre 2021.

- Conseil d’Orientation de l’Emploi (COE, 2017a), *Automatisation, numérisation et emploi. Tome 1: Les impacts sur le volume, la structure et la localisation de l’emploi* [Automation, digitization and employment. Volume 1: Impacts on the volume, structure and location of employment], janvier 2017.
- Conseil d’Orientation de l’Emploi (COE, 2017b), *Automatisation, numérisation et emploi. Tome 2: l’impact sur les compétences* [Automation, digitization and employment. Volume 2: Impacts on skills], septembre 2017.
- Conseil d’Orientation de l’Emploi (COE, 2017c), *Automatisation, numérisation et emploi. Tome 3: l’impact sur le travail* [Automation, digitization and employment. Volume 3: Impacts on work], décembre 2017.
- Combexelle J.-D. (2015), *La négociation collective, le travail et l’emploi* [Collective Bargaining, Labour and Employment], Rapport au premier ministre, septembre 2015.
- Cour des comptes (2022), *Le télétravail dans la fonction publique après la crise sanitaire. Premier bilan* [Teleworking in the public service after the health crisis. First assessment], Rapport public thématique, novembre 2022.
- Cousin O. (2004), *Les cadres : grandeur et incertitude* [Executives: greatness and uncertainty], Paris: L’Harmattan.
- Dares (2021), *La négociation collective en 2020, édition 2021* [Collective bargaining in 2020, 2021 edition], Bilans et rapports, Ministère du Travail.
- Defossez A. (2020), « Introduire la télésanté à l’hôpital. Observations sociologiques dans un service oncologie » [Introducing telehealth in the hospital. Sociological observations in an oncology department], *Marché et organisations*, 2020/2 n° 38, pp. 61-79.
- Derdevet M. (2017), « Digitalisation et gestion ouverte des données : de nouveaux horizons pour les distributeurs d’électricité », *Annales des Mines - Responsabilité et environnement*, 2017/3 (N° 87), pp. 54-58.
- DGAFP (2021), *Rapport annuel sur l’état de la fonction publique* [Annual report on the state of the public service], 2021.
- DREES (2020), « Évolution des effectifs salariés hospitaliers depuis 15 ans, Méthodologie de construction d’agrégats nationaux » [Evolution of the number of hospital employees over 15 years, Methodology for the construction of national aggregates], *les dossiers de la DREES*, n° 69, décembre 2020.
- DREES (2021), « L’exposition à de nombreuses contraintes liées aux conditions de travail demeure, en 2019, nettement plus marquée dans le secteur hospitalier qu’ailleurs », *Etudes et Résultats*, n°1215, novembre.
- DREES (2022), « Les établissements de santé », édition 2022, *Panoramas de la DREES*.
- Dujarier M.-A. (2015), *Le management désincarné : Enquête sur les nouveaux cadres du travail* [Disembodied management: Survey of new work frameworks], Paris: La Découverte.
- ECORYS and Danish Technological Institute (2016), *The impact of ICT on job quality: evidence from 12 job profiles, An intermediate report from the study ‘ICT for work: Digital skills in the workplace – SMART 2014/0048’*, Prepared for the European Commission DG Communications Networks, Content & Technology.
- ENA (2019), « E-administration et transition numérique de l’Etat » [E-administration and digital transition of the State], Centre de ressources et d’ingénierie documentaires – bibliographie, décembre 2019.
- European Commission (2021), *Digital Economy and Society Index (DESI) 2021 - France*.
- Fleury N., Rémond A. et Rustique A., (2022), « Covid-19 et Télétravail: un nouveau modèle » [Covid-19 and Teleworking: a new model], *La Lettre Défricheurs du Social*, n° 38, février 2022.
- Force Ouvrière (FO, 2015), *L’impact du Numérique sur le Travail*, [The impact of digitalisation on work], Réflexions de Force Ouvrière.
- French government (2021a), *Plan national de relance et de résilience* [National Recovery and Resilience Plan], French government.
https://www.economie.gouv.fr/files/files/directions_services/plan-de-relance/PNRR%20Francais.pdf
- French government (2021b), *France 2030, Plan d’investissement* [Investment plan], French government,
<https://www.economie.gouv.fr/files/files/2021/France-2030.pdf>

- France Stratégie (2016), *L'effet de l'automatisation sur l'emploi: ce qu'on sait et ce qu'on ignore*, [The effect of automation on jobs: what we know and what we don't], La note d'analyse, n°49, juillet 2016.
- Frey C.B. and Osborne M.A. (2013), 'The future of employment: how susceptible are jobs to computerisation?', University of Oxford.
- Ginibrière G. (2021), 'Pourquoi la transformation numérique est encore éparpillée façon puzzle' [Why digital transformation is still a scattered puzzle], *La Gazette*, pp. 24-25, 15 November 2021).
- Grandclement A. (2020), « Les pôles de compétitivité : d'une géographie de l'innovation à une géographie de la production » [Competitiveness clusters: from a geography of innovation to a geography of production], *Géococonfluences*, décembre 2020.
- Grevin A. (2011), « Les transformations du management des établissements de santé et leurs impacts sur la santé au travail : l'enjeu de reconnaissance de dynamiques de don. Etude d'un centre de soins de suite et d'une clinique privée malade de « gestionnisme » » [Transformations in the management of healthcare establishments and their impact on occupational health: the challenge of recognizing donation dynamics. Study of a follow-up care center and a private clinic suffering from 'gestionnisme'], Thèse de doctorat en Sciences de Gestion, Université de Nantes.
- Gruson D. (2019), « L'intelligence artificielle et le métier infirmier » [Artificial intelligence and the nursing profession], *La revue de l'infirmière*, n° 252, juin-juillet 2021.
- Haliday H., Naudin, D. (2019), « Comment qualifier l'impact des réformes de santé sur la qualité de vie au travail des soignants ? Leçons de l'implémentation de la tarification à l'activité et de l'informatisation des services de soins dans les hôpitaux français » [How to describe the impact of health reforms on the quality of life at work of caregivers? Lessons from the implementation of activity-based pricing and the computerization of care services in French hospitals], *Éthique et Santé*, (16), mai 2019, pp. 51-58.
- Hüsing T., Korte W.B. and Dashja E., (2015), 'Trends and Forecasts for the European ICT Professional and Digital Leadership Labour Markets (2015-2020)', Empirica Working Paper, november 2015.
- Insee (2019), *L'économie et la société à l'ère du numérique* [Economy and society in the digital age], édition 2019.
- Jeannot G. (2020), « Vie et mort de l'État plateforme » [Life and Death of the Platform State], *Revue française d'administration publique*, vol. 173, no. 1, 2020, pp. 165-179.
- Kaufman J.-C. (2002), « L'expression de soi » [self-expression], *Le Débat*, n° 119, p. 116 à 143, mars-avril 2002.
- Lhuillier D., « Les « risques psychosociaux » : entre rémanence et méconnaissance » ['Psychosocial risks': between persistence and ignorance], *Nouvelle revue de psychosociologie*, n° 2, 2010, pp. 11-28.
- Mallard A. (2011), « L'encadrement face au développement des interactions en réseau. Quelques réflexions sur le travail des managers dans les organisations fortement marquées par les TIC » [Management in the face of the development of network interactions. Some thoughts on the work of managers in organizations strongly influenced by ICT], in Pierre-Michel Riccio et Daniel Bonnet (dir.), *TIC et innovation organisationnelle, Journées d'étude MTO*, Paris: Presses des Mines.
- Mettling B. (2015), *Transformation numérique et vie au travail* [Digital transformation and working life], Rapport pour la Ministre du Travail, de l'Emploi, de la Formation Professionnelle et du Dialogue Social, septembre 2015.
- Mieg C. (2017), « Comment tenir au travail ? Pourquoi lâcher ? » [How to hold up at work? Why let go], *Revue de culture contemporaine*, n° 4243, novembre, pp. 47-56.
- Miné M. (2017), « Droit du travail : la hiérarchie des normes est-elle inversée ? » [Labour law: is the hierarchy of standards reversed?], *The Conversation*, 27 septembre 2017.
- O'Reilly T. (2011), "Government as a Platform": Innovations: Technology, Governance', *Globalization*, 6 (1), pp. 13-40.
- Opérateur de compétence interindustriel (OPCO 2I, 2020), *Panorama des branches professionnelles Industries électriques et gazières 2020* [Overview of professional branches Electricity and gas industries 2020].
- OSE and EPSU (2018), *The impact of digitalisation on job quality in European public services. The case of homecare and employment service workers*, final report, June 2018.

- Pak M. and Poissonnier A. (2016), 'Accounting for technology, trade and final consumption in employment: an Input-Output decomposition', Série des documents de travail de la Direction des Études et Synthèses Économiques, G 2016/11, Insee décembre 2016.
- Parmantier B (2011), « Le secteur des industries électriques et gazières en France : Évolution des relations sociales de la nationalisation à la privatisation » [The electricity and gas industry sector in France: Evolution of social relations from nationalization to privatisation] In: *Relations sociales dans les services d'intérêt général: Une comparaison France-Allemagne* [en ligne]. Cergy-Pontoise: IFAEE. Available online: <<http://books.openedition.org/cirac/472>>.
- Piperini M.-C., Simeone A., Simnian S., Chake R., Topouzkhianian S., Garcia J.-P. (2020), « Effet modérateur des TIC sur les risques psychosociaux en hôpital psychiatrique » [Moderating effect of ICT on psychosocial risks in psychiatric hospitals], *Les Cahiers Internationaux de Psychologie Sociale*, 2020/1, Numéro 125-128, Presses universitaires de Liège, pp. 109-132.
- PIX, Les Interconnectées and Syntec numérique (2021), « COMPÉTENCES NUMÉRIQUES : Quel est le niveau des agents territoriaux ? » [DIGITAL SKILLS: What is the level of territorial agents], 2020.
- Radé C. (2017), « Accords de branche et accords d'entreprise. Attention : une réforme peut en cacher une autre » [Branch agreements and company agreements. Warning: one reform can hide another], Colloque du 3 mars 2017, Institut du Travail de Bordeaux.
- Rallet A. et Walkowiak E. (2004), « Technologies de l'information et de la communication : organisation du travail et évolution des qualifications » [Information and communication technologies: organization of work and evolution of qualifications], *Sciences de la société*, pp. 94-111.
- Réalités du dialogue social (2020), *Comment mettre le numérique au service du dialogue social dans les entreprises et la fonction publique ?* [How to put digital technology at the service of social dialogue in companies and the public service ?], Synthèse des travaux 2018-2019 du groupe de réflexion « Impact du numérique sur le dialogue social », mars 2020.
- Reshef A. and Toubal F. (2019), « La polarisation de l'emploi en France, Ce qui s'est aggravé depuis la crise de 2008 » [The polarization of employment in France, What has worsened since the crisis of 2008], collection du Cepremap, 20 février 2019.
- Roland Berger and Cap Digital (2014), *Du rattrapage à la transformation. L'aventure numérique, une chance pour la France* [From recovery to transformation. The digital adventure, an opportunity for France], septembre 2014.
- Sénat (2011), « Statut juridique de Pôle emploi » [Legal status of Pôle emploi], Base de questions du Sénat (13e législature), 13 juin 2011 (<https://www.senat.fr/questions/base/2011/qSEQ11031243S.html>).
- Sénat (2021), *Bilan des réformes en matière de dialogue social et de négociation collective* [Review of social dialogue and collective bargaining reforms], Rapport d'information n° 722, Commission des affaires sociales, juin 2021.
- UGICT-CGT (2021), *Enquête nationale sur le télétravail* [National telework survey], *dossier de presse*, septembre 2021.
- Weghmann V. and Sankey K. (2022), *Hollowed out: Increased private sector dependency in Europe's central/federal governments and the European Commission*, Report for EPSU, March 2022.

Annex 1. List of interviews

ID	Gender	Age	Institution	Sector	Occupational group	Position	Date	Method
INT1	Male	?	Union fédérale des syndicats de l'Etat – CGT (UFSE-CGT)	Public administration	-	National secretary	11.04.2022	Face to face
INT2	Male	?	CFDT Plaine Commune	Public administration	-	Co-secretary	11.05.2022	Face to face
INT3	Male	?	Interco-CFDT	Public administration	-	Federal secretary (Europe and international)	11.05.2022	Face to face
INT4	Female	?	Interco-CFDT	Public administration	-	Federal secretary	16.05.2022	Videoconference
INT5	Female	?	CFDT Pôle Emploi Ile-de-France	Public administration	-	Shop steward	25.05.2022	Videoconference
INT6	Male	58	CFDT Enedis	Electricity	-	Shop steward, present in the national and regional work councils	20.04.2022	Videoconference
INT7	Male	?	CFE CGC (CFE-CGC – UNSA ⁽⁶⁸⁾ alliance) EDF	Electricity	-	Shop steward, joint secretary of the works council	09.05.2022	Videoconference
INT8	Female	52	CFE CGC (CFE-CGC - UNSA alliance) EDF	Electricity	-	Elected representative (works council)	01.06.2022	Videoconference
INT9	Male	?	CFE CGC (CFE-CGC - UNSA alliance) EDF	Electricity	-	Elected representative at the works council	07.06.2022 & 9.06.2022	Videoconference
INT10	Male	?	Fédération nationale des mines et de l'énergie CGT (FNME-CGT), 100% seconded from ENEDIS	Electricity		Federal administrator	18.06.2022	Videoconference
INT11	Male	?	Fédération Force Ouvrière des personnels des Services Publics et des Services de Santé (FPSPS-FO)	Public and private hospital	-	Federal secretary	20.04.2022	Face to face
INT12	Male	?	Union fédérale des médecins, ingénieurs, cadres et techniciens (UFMICT-CGT), & CGT Santé Action Sociale	Public and private hospital	-	General secretary UMICT-CGT, and Federal secretary (CGT Santé Action Sociale)	23.05.2022	Face to face
INT13	Female	?	Santé Sociaux-CFDT	Public and private hospital	-	Political leader	26.08.2022	Videoconference

68. *Union nationale des syndicats autonomes*, or national union of autonomous unions.

Annex 2. List of focus groups

Public administration - CFDT Finances Headquarters, Paris, 4 January 2023.

Hospital Sector - CGT office, Trousseau Hospital, Paris, 17 November 2022.

Electricity Sector - CGT and FNME-CGT headquarters, Montreuil, 12 October 2022

ID	Gender	Age	TU affiliation	Sector	Occupation
FG1	Male	?	CGT Enedis	Electricity	Technician
FG1	Female	?	CGT Enedis	Electricity	Human resources employee
FG1	Male	?	CGT Enedis	Electricity	Project manager
FG1	Male	?	CGT Enedis	Electricity	Technician
FG2	Female	56	CGT Trousseau	Public and private hospital	Nurse
FG2	Female	23	CGT Trousseau	Public and private hospital	Nurse
FG2	Female	52	CGT Trousseau	Public and private hospital	Caregiver
FG2	Female	50	CGT Trousseau	Public and private hospital	Secretary
FG3	Male	?	CFDT	Public administration	Inspector of Finance
FG3	Male	?	CFDT	Public administration	Collections officer
FG3	Male	?	CFDT	Public administration	Inspector of Finance
FG3	Male	?	CFDT	Public administration	'Operating system developer' Inspector
FG3	Female	?	CFDT	Public administration	Administrative official