Competing in the new Europe: Industrie 4.0 / industrie du futur

French people often speak about ‘industrie du futur’ (industry of the future) whereas German people call it ‘Industrie 4.0’. Despite this difference in vocabulary, France and Germany are trying to work together on this topic. Conferences and meetings are organised by both politicians and major actors in industry, notably to deal with employment issues resulting from this fourth industrial revolution.

Startups, the sharing economy, 3D printing, big data, the internet, smart manufacturing … all these evolutions are building the concept of Industrie 4.0, the shorthand for automation and data exchange in manufacturing technologies.

Industrie 4.0 has, and will continue to have, enormous implications for employment status, both in France and Germany. Indeed, this new revolution requires modern work solutions.

In 2015 the German Ministry of Labour and Social Affairs started a dialogue and raised questions on how current technology trends, social developments and changes in labour market may create a new working model or concept. This resulted in the White Paper – Work 4.0 Draft Discussion on 29 November 2016. The draft offers first responses to this development and conclusions drawn from the dialogue process. It has been read with interest by Matthew Taylor as part of his UK review, illustrating the cross-border influences of a ‘British solution’.

The German concerns

In general, future work will be more digital, more flexible and characterised by new forms of work and new working conditions. This so called Work 4.0 originates from Industrie 4.0, the fourth industrial revolution that focuses on digitalisation and the increasing importance of the Internet.

According to the Ministry of Labour and Social Affairs, Work 4.0 influences various aspects of daily work. Complete new ways of accomplishing work (e.g. crowworking) will develop, but the interaction of workers with robots will be a challenging area. Ideas about flexible working hours and places, and questions concerning the safety and environments of future workers will arise.
Technology is not the only factor changing our employment reality. Social preferences and values are shifting because of people’s life plans. Younger generations desire a better work-life balance and want to gain greater working sovereignty. The desire for more flexible working hours, by using working time accounts or similar instruments, is accompanied by the technical revolution in Industrie 4.0, such as mobile devices and broadband internet. These give employees the possibility of better coordinating family commitments and individual needs with their working lives. Thus digital transformation is experienced as new freedoms for many employees.

In Germany, the question that arises from this development is how modern forms of work (especially flexible working hours and flexible places of work) can be introduced in compliance with existing German labour law, and not displace it. The German view is less radical than the concerns of some in the UK, but reforms are still possible within the requirements of binding EU Directives.

In some respects, Germany’s attitude may correspond to the reduced take-up of online labour in core EU countries compared to elsewhere. As the graphic below shows, online work appears to have more market share in several countries like the US, Australia and UK than in aggregated EU states, including Germany.

Which countries are buying online labour the most?

![Chart showing which countries are buying online labour the most.]

Source: Online labour index, 2016
Time and space

Industrie 4.0 impacts the workplace of modern workers. Some employees, including engineers, will be able to control and monitor machines, robots, production processes and the factory in general from home thanks to their connected devices. The working time of these employees cannot be monitored as in a traditional factory (where the clocking in system is often used). Consequently, the employees may perform a lot of overtime, in violation of health and safety rules on working time.

For these reasons, a new French law obliges companies with more than 50 employees to negotiate with their relevant union in order to reach a collective agreement on the employees’ right to disconnect (droit à la déconnexion) and ways in which they can regulate the use of digital tools. However, this new law has been criticised by some as potentially limiting employee flexibility.

The German Working Hours Act (Arbeitszeitgesetz) has explicit regulations concerning maximum working hours, rest periods and work on weekends and public holidays (only allowed in exceptional cases. Although Saturdays are regarded as working days, employers have to be very careful with accepting work that might have been done on weekends or public holidays). Employees may work a maximum of eight hours per day. This can be extended to ten hours per day provided that working hours do not on average exceed eight hours per day calculated over six calendar months or 24 weeks.

This does not match just-in-time production and globalisation trends where performance is judged by results and not time spent. Where a project deadline is approaching, the work may still need to be finished urgently, even if an employee has already worked ten hours that day. A more flexible approach to fix this problem would be a provision for maximum weekly hours instead of maximum hours per day. This would still be in compliance with the EU’s Working Time Directive, which states that weekly working hours must not exceed 48 hours on average, including any overtime.

As in France, email and digital tools affect rights on working time. For example, German workers are entitled to an uninterrupted period of at least eleven hours at the end of a working day. Keeping this in mind, receiving an email and answering it within one’s rest period may result in the period being interrupted and starting from scratch! Clearly, the rest period is intended for traditional employment relationships. The need for legislators to update this specific rule is obvious. Short interruptions such as these should not result in a new rest period for 11 hours.

“receiving an email and answering it within one’s rest period may result in the period being interrupted and starting from scratch!”
New jobs, new workplaces

Digitalisation involves the evolution of numerous jobs and the creation of new ones, especially in digital, robotisation and data analysis.

After years of the delocalisation of big companies, many are now beginning a relocation process that makes them more specific or direct in their customer positioning in the framework of Industrie 4.0. Digitalisation allows companies to produce better-personalised products for consumers, allowing them to be closer to their clients.

Consequently, manual workers are metamorphosing into intellectual workers in France, which brings the need for qualified human resources.

Such an evolution sometimes creates tensions between larger employers and small and medium-sized enterprises. Indeed, the latter have experienced difficulties in finding engineers. Faced with this problem, shared learning pathways (parcours partagés d’apprentissage) have been widely developed over recent years in the French aeronautic industry to offer new graduates the opportunity to first acquire experience within a big group, and then in a small or medium-sized enterprise. This allows them to choose the type of company for which they would prefer to work.

Professional unions have already begun their reflection on these changes and the consequences of digitalisation, especially regarding new forms of work. As in the UK, thought needs to be given to how these shared pathways and plural forms of experience can adapt to worker voices.

The idea of Work 4.0 can enable more employees (in theory) to choose their working place. The regulation of established concerns like home-offices is supplemented by the concept of agile working. Contractual agreements are necessary, since allowing agile working imposes obligations on the employer. For example, the German Occupational Health and Safety Act (Arbeitsschutzgesetz) requires employers to organise work so as to avoid as far as possible any risk to the life or health of the worker. In order to comply, businesses need a contractual right to access the property of those employees who want to work from home or elsewhere. It is not implied by law.

Crowd working

The possibilities of broadband internet and the growth of agile working have led to a whole new form by which work is accomplished. Services, ideas or content can be obtained from an online community, rather than from traditional employees. These individuals regard themselves as being free to choose when and where they work: they do not receive directives from their clients. This loose and non-binding form of cooperation raises questions about how to treat crowdworkers under German labour law, which defines an employee as someone who renders services to someone else and, by doing so, depends on him (persönliche Abhängigkeit). An individual integrated in an employer’s organisation and receiving instructions on place, time and the content of the work easily passes the test of dependency and is therefore an ‘employee’, with all the associated rights. In contrast, it is highly arguable that crowdworkers are not in an employment relationship, but are freelancers. As a result, every German law to protect employees (such as vacation entitlement, sick pay, and rules against unfair dismissal) is inapplicable.
Besides the idea of status, the idea of crowdworking raises problems for another central concept in German employment law: the idea of an establishment. Various protection laws are based on this term, which goes back to the famous German scholar Alfred Hueck. An establishment requires some form of common structure of employees, means of production and leadership – which crowdsourcing usually lacks. Although it is not required that employees work together on one single site, at least some sort of organisational connection between means of production, employees and leadership is needed. This organisational connection is often seemingly absent in the case of crowdworking. For conventional businesses it may be most welcome if legislators react to these developments by establishing new laws to cover forms of work outside employment law protection, to avoid a distortion in competition.

Co-determination and oversight

The French legal and conventional industry framework is founded on the principle that the employee is entitled to a private life, even at work. However, with the development of Industrie 4.0, there are risks that technical innovations lead to an automatic verification of the work performed by the employee (with GPS, assistant cameras, robots, connected captors and so on) and that the employee would no longer have a private life in their workplace.

Consequently, the employer would be able to record each task accomplished by the employee and determine whether they duly comply with the process put in place and whether they are efficient.

The data collected on employees (which may not be anonymous) could be analysed by AI programs to evaluate the employee’s efficiency. It would be possible that an employer would decide to dismiss an employee (for underperformance, for example) on the basis of these technologies with limited human intervention.

This is why it seems to be more and more important for innovative French companies, in order to avoid conflicts with their employees, to put in place regulations and negotiated agreements with employees and staff representatives regarding the proper use of these digital tools such as computers, smartphones, robots and connected devices. For example, as in Germany, a negotiation could define the conditions under which staff representatives would be entitled to check the company’s database in order to analyse the way it is used.

The internet plays a crucial role in Work 4.0. Amazon’s Mechanical Turk, for example, looks to the outsider like a machine. As the company wrote in its 2005 SEC filing, Mechanical Turk provides a way for computers to “integrate a network of humans directly into their processes”. The internet is not just a way to bid for work, or its means of delivery. Representing one’s company on social media is a key element of gaining attention for your product, recruiting high-profile employees and building a brand.
German law (the Betriebsverfassungsgesetz – BetrVG) requires any employer wanting to implement technology which is capable of being used to monitor the performance or behaviour of its employees to first negotiate with, and obtain the agreement of, the works council (a process known as co-determination). In December 2016, the German Federal Labour Court (Bundesarbeitsgericht) ruled that this extends to where the employer’s Facebook page allows customers or users to post comments that are related to the behaviour and performance of the employees. The decision is of great significance for companies with existing work councils in Germany that have an online commenting function for users.

The works council was of the opinion that an employer could be looking for employee misbehaviour by looking through the Facebook comments. This argument was partly successful before the court. The judges ruled that only the employer’s decision to directly publish posts on its Facebook page is subject to co-determination, since posts that refer to the behaviour or performance of employees constitute a monitoring of the conduct or performance of the employees within the meaning of the law. Any comment which allows evaluation of the behaviour or performance of an employee is equivalent to monitoring employees using a technical device.

To be on the safe side, companies with existing work councils and social media pages which provide direct commenting should temporarily disable this function until they have co-ordinated the use of these functions with their works council.

Conclusion: inclusion

The success of Industrie 4.0 will undoubtedly be linked to the ability to adopt new rules allowing and reinforcing modern work solutions while negotiating employees’ protection of their fundamental rights or existing interests. How far it can do this, while enabling the inclusion of more people, remains to be seen.

“In the longer term employers automate work. Where employees are still used, firms become more selective, going for older, more experienced workers – implicitly discriminating against women, younger workers and some ethnic groups. Unsurprisingly France, with absurdly generous employee rights for ‘insiders’, has lower female employment than the UK, and massive youth and minority unemployment”


Agree or disagree, it is striking how, in both France and Germany, a negotiated solution is seen as needed between businesses and their existing works councils or industry bodies. Can workplace discussion fix the issues where existing legal forms are rigid or slow to do so? It is harder to do this where atypical working or fragmented employment models are already in place. What works for France and Germany may not work for the UK.

Marc Gimmy, Munich, and Claudia Jonath, Paris