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An eight-hour working day and an at least 36 hours of uninterrupted rest per week; better hygiene and safety measures in factories; and an end to child labour – once, that was our vision of the future of work. Today there are new visions of how we would like to work: the creative knowledge worker, for example, sitting by a lake with his laptop. Or the manufacturing worker who uses an app to choose her preferred shifts for the coming week.

The future world of work will be different from today’s. Will it also be better? Will we work in a more self-determined and healthy way? Will we go back to university or learn a new occupation at the age of 50? Are machines taking away our jobs, or are they paving the way for innovations and productivity gains which create new ones?

We wrote a Green Paper setting out questions. It is now fitting that we publish a White Paper offering answers. This document summarises the conclusions we have drawn from the public dialogue. Through it, we want to capture and define a broader public debate and provide impetus, within the Federal Government and beyond, for society to shape the future of work.

The vital significance of the digital transformation for our country is also reflected in the Federal Government’s Digital Agenda and its priorities for action. The Federal Ministries are engaging with this issue through various initiatives and platforms. Broadband roll-out and internet access, data security and the implementation of new manufacturing concepts – defined as “Industry 4.0” – are vital for our position as a location for business. This is the context for the Work 4.0 dialogue.

It is already clear that the digital transformation – especially in relation to the world of work – polarises opinion. For some it offers excitement and the prospect of greater personal freedom, for others it bodes uncertainty. After many discussions, my personal conclusion is: we want to seize the opportunities which digitalisation offers for our economy, for the labour market, and quality jobs. In doing so, we must take concerns about job losses, the erosion of skills, work intensification and the breakdown of the boundaries between work and private life seriously; as well as taking into account the divide between people who find promise in freedom and flexibility and those who seek stability and security.

At the same time, we must highlight where the opportunities lie, and show that we have the power to shape the direction of change.

If this White Paper were a novel, digitalisation might well be its secret main character, never far from the action and significantly influencing how events unfold. But it is not the sole protagonist, and the White Paper has more than a single theme. Instead, Work 4.0 stands for the changes taking place in the whole of the working world and their implications for society. Rather than describing the normal status quo today, Work 4.0 is about future perspectives, scenarios and opportunities – to shape work in a way which benefits people and advances our economy.
What are our aims? A fair compromise between employers’ flexibility requirements and workers’ needs. A campaign to promote lifelong learning and every worker’s right to continuing vocational education and training, because jobs are changing to an unprecedented extent. Participation in the labour market and fair wages. More choice around working hours and an innovative approach to working time which recognises the personal, family and societal demands on people, alongside the demands of work, and which supports new solutions in balancing these demands. Technology which lightens people’s workloads. Guaranteed statutory protection for all workers and new ways of supporting healthy work. Data protection rules which ensure that employee data protection standards aren’t violated, even in the future. Co-determination and involvement in the workplace and through social partners. Better social protection for self-employed individuals and fair working conditions in the platform economy. A welfare state which takes the diversity of people’s life plans and the need to offer protection against upheavals seriously, and which takes a forward-looking approach rather than reacting to disruptive changes after the event.

The Work 4.0 dialogue has made clear that we need to embark on new paths in order to launch and drive forward negotiations at all levels to shape the way we work. I firmly believe that our model of co-determination and social partnership offers the best foundation for Germany to become a pioneer in shaping decent work in the digital age. Our efforts in shaping the future world of work will continue. They are worthwhile.
SUMMARY OF RESULTS

This White Paper on what we have called “Work 4.0” is the culmination of a consultation process launched in April 2015 with the publication of a Green Paper by the Federal Ministry of Labour and Social Affairs. “Work 4.0” is a necessary extension of the debate about the digitalisation of the economy, generally referred to as “Industry 4.0”. The Federal Ministry of Labour and Social Affairs invited associations, trade unions and businesses to submit responses, held numerous specialised workshops and events, commissioned academic studies, and formed an impression of public opinion based on a direct dialogue with the public at local level – for example during the “Futurale” film festival. The overarching question was: how can we preserve or even strengthen our vision of quality jobs and decent work (Gute Arbeit) in an era of digital transformation and societal change?

The Green Paper raised specific questions. This White Paper offers initial answers.

Chapter 1 sets out the major trends and key drivers in the current transformation of the world of work: digitalisation, globalisation, demographic change, education, migration, and the transformation of people’s values and preferences. These are the forces driving change. Even so, the exact shape which developments take and their scope are in no way predetermined.

Chapter 2 takes a closer look at key challenges and tensions characterising the World of Work 4.0, where new needs for action are emerging for businesses, workers, social partners, trade associations, policy-makers at federal and state level, as well as other stakeholders. The subchapters take an analytical approach – they describe changes taking place in the world of work and explore the associated opportunities and risks. The focus is on six key questions which were raised in the consultation process and outline main areas of tension between technological and economic progress, on the one hand, and working conditions, on the other. First: will digitalisation enable everyone, as far as possible, to have a job in future? And, if so, subject to what conditions? Second: what will be the impact of new business models such as “digital platforms” on the work of the future? Third: if the collection and use of data is becoming ever more important, how can employees’ legitimate entitlement to data protection be guaranteed? Fourth: if humans and machines work together ever more closely in future, how can machines help to support and empower people in the way they work? Fifth: the world of work is becoming more flexible. But what might solutions look like which also improve options for workers, in terms of when and where they do their work? Sixth: what will the modern company of the future look like – one which may no longer resemble a traditional company in all respects, but which nonetheless facilitates participation and social security for its employees?

Chapter 3 outlines our vision of decent work and quality jobs within the digital transformation, and forms the normative basis for the conclusions and policy options of Chapter 4. The vision draws on the strengths of the German economic and social model and argues for a socially balanced future world of work which offers both, security and flexibility. Fair wages and social protection remain the fundamental criteria for quality jobs, and offering all citizens the opportunity to participate in the labour market under favourable conditions continues to be a key policy objective. At the same time, it is important to recognise the growing diversity in workers’ preferences regarding working life, which entails giving people more autonomy over the way they structure their lives. To this end, we need to make the most of the potential offered by technological change for shaping and organising work in a better way. Institutional co-determination (Mitbestimmung) and new forms of individual participation for workers should be regarded not as contradictory, but as complementary, hallmarks of innovative and democratic businesses, within an innovative and democratic society.

Chapter 4 identifies key areas of activity and sets out potential policy solutions. The technological and economic transformation we are experiencing will not entail a wholesale automation of jobs. However, occupations and activities will likely be transformed, and employment will shift substantially between sectors. In the light of such upheavals, it is essential to invest in boosting skills and improving individual prospects for advancement at an early stage. This support must be focused on prevention: it should not only target low-skilled workers; take effect late in a person’s working life, or immediately prior to redundancy, but follow a broader approach. Under this logic, the current unemployment insurance should be gradually transformed into an employment insurance, to allow more preventive support for workers. An important ele-
ment would be the right to independent advice on lifelong education, training and up-skilling. Looking to the future, one of our aspirations is the introduction of a legal right to continuing vocational education and training (→ Chapter 4.1).

Digitalisation offers the opportunity for greater self-determination in the world of work. However, a balance must be struck between conflicting interests and goals. Legally binding protection against overwork and against the undue intrusion of work into a person’s private life is essential. People increasingly express a need for more control over when and where they work. The current coalition agreement contains an initiative to anchor a general right to temporary part-time work in the Act on Part-Time and Fixed-Term Employment (Teilzeit- und Befristungsgesetz), this would make an important contribution to meeting workers’ demands for greater autonomy. Negotiated working time models and flexibility compromises are becoming more and more important, recognising that the organisation of working time forms a central plank of effective human resources strategies, performance appraisal criteria, and management cultures.

A specific, more far-reaching approach would be a Working Time Choice Act (Wahlarbeitszeitgesetz), which would combine greater choice for workers in relation to working time and location with a conditional possibility to derogate from certain provisions of the Working Time Act (Arbeitszeitgesetz) on the basis of a collective agreement between the social partners and an implementation at firm-level. This should initially be limited to a two-year period and trialled through pilots within workplaces (→ Chapter 4.2).

It is important to recognise that digitalisation goes beyond Industry 4.0, and strongly impacts on the service and trade sectors in particular. This applies not only to the nature of work itself, but also to the fact that platforms are increasingly acting as intermediaries, with profound effects on markets and employment conditions. Especially in the services and care sectors, collective bargaining coverage should be increased and, looking to the future, eventually lead to a generally binding collective agreement for the social sector. The importance of the care sector will continue to grow. Attractive working conditions are particularly necessary in this area. Public co-financing is sensible in the case of socially necessary services delivered by the private sector. A new model of a household services account and its digital administration could be a suitable approach to support households (→ Chapter 4.3).

Health and safety at work must be adapted not only in the light of the digital transformation, but also of increasingly perceptible demographic changes. To this end, it will be necessary to focus more on the psychological strains of work, alongside physical demands. The Federal Ministry of Labour and Social Affairs will therefore seek to further develop health and safety instruments into an Occupational Safety and Health Strategy 4.0 (→ Chapter 4.4).

Employee data protection requires a comprehensive approach. This is both a result of continuing technological developments and the growing importance of digital applications in the world of work; and of the new European legal framework, the European General Data Protection Regulation due to enter into force in 2018. The Federal Ministry of Labour and Social Affairs will seek to ensure that the crucial provision on employee data protection (Section 32 of the Federal Data Protection Act (Bundesdatenschutzgesetz)), which regulates “Data collection, processing and use for employment-related purposes”, is retained. As a second step, the leeway for more specific provisions which the European General Data Protection Regulation grants to national legislators should be put to use. To monitor and support further developments, the Federal Ministry of Labour and Social Affairs will establish an interdisciplinary advisory council and promote the development of an Employee Data Protection Index, through which quality standards will be set in a scientifically-informed process (→ Chapter 4.5).

Social partnership, co-determination and democratic participation in shaping working conditions are core elements of Germany’s social market economy, a stabilising force in times of crisis, and a factor for success in the face of international competition. To successfully cope with digital structural change, the negotiation processes between the social partners and at firm-level need to be strengthened. In particular, this requires a stabilisation of collective bargaining structures in Germany, a broader foundation for workers’ involvement in their organisations, adequate rights and resources for works and staff councils, and the safeguarding of national and European standards for corporate co-determination. The Federal Ministry of Labour and Social Affairs will therefore continue to propose greater flexibility in applying the general legislative
frameworks contingent on the existence of collective agreements. It will take steps to promote the establishment of works councils, and it will present proposals for boosting the ability of works councils to engage in effective and efficient co-determination in the digital world of work.

This will also work in the interests of employers, who rightly have a need for greater flexibility in the light of rapid market changes (→ Chapter 4.6).

Creating a conducive environment for self-employment and start-ups in Germany is an important economic policy priority, and effective labour-market and social policies are key enablers in this. The lines between employment and self-employed work are blurring; this will be even truer in the digital world of work. Against this background, it is appropriate and reasonable to include self-employed individuals in the statutory pension insurance system alongside employees. The associated contributions must be assessed together with costs incurred in other social insurance systems, in particular statutory health insurance. Beyond provisions for old age, one-size-fits-all solutions will not meet the needs of everyone in self-employment. Legislators should therefore determine the appropriate level of protection which different types of workers need, and include them in labour- and social-policy legislation accordingly. Looking to the future, it might be useful to base regulations for crowdwork on our long-standing, tried-and-tested regulations for home workers (→ Chapter 4.7).

A major aim in further developing the welfare state’s institutions is to stabilise employability and facilitate people’s various transitions over their working lives. The concept of a Personal Activity Account would see young workers granted initial capital, as a form of “social inheritance”, which can be used for skills development, starting a business, or career breaks for personal reasons. It could also be managed as a long-term account individuals would be able to pay into. Today, the interplay between work and the welfare state can only be developed further when the broader European context is taken into account. This also applies to the consequences of the digital transformation, which must therefore also be discussed at the European level (→ Chapter 4.8).

The debate on the Work 4.0 will continue. New trends must be recognised, and some options need testing in order to determine their effects in practice. Chapter 5 sketches a way forward in our efforts to “re-imagine work”.

We need better data to observe and foresee how our world of work will develop over the coming years. The Federal Ministry of Labour and Social Affairs is therefore proposing to introduce a regular public reporting on the world of work, with the involvement of academia and the social partners representing employers and workers.

To achieve new flexibility compromises, we should examine further incentives and instruments to support social partnership, collective bargaining coverage and the establishment of works councils. Rather than simply seeking to slow the erosion of collective bargaining coverage and staff representation which has been evident over recent decades, we should endeavour to reverse this trend. We want a phase of “shared learning in and from the transformation” and an experimental testing of new strategies. One crucial aspect of this is to put solutions into practice at the workplace level. Moreover, we need a new interministerial innovation, research and transfer strategy for “Work 4.0”. The Federal Government’s existing research funding and transfer capabilities should therefore be dovetailed and expanded if necessary. In consultation with the social partners, we need to identify topics and areas for testing – what we call ‘experimental spaces’ – which can then be trialled in sectors or individual companies, accompanied by scientific supervision.

Evolution rather than revolution is our way forward, not only in shaping the digital transformation of the world of work, but also in relation to how we think about redistribution. Going beyond the Work 4.0 dialogue, we need to reach a consensus in society on the future of the welfare state and its social security systems.
This White Paper is the culmination of an extensive consultation process. Many associations, institutions and companies have submitted responses to the key questions set out in the Green Paper. Members of the public have made their voices heard on the website www.arbeitenviernull.de or via social media. These comments, contributions and suggestions have fed into the White Paper – in some cases directly in the text itself, in some cases as quotes in the margin.

The following key explains the symbols used in the text to help readers navigate the document.
1.1 DIGITALISATION
1.2 GLOBALISATION
1.3 DEMOGRAPHY AND THE FUTURE
LABOUR SUPPLY
1.4 CULTURAL CHANGE
1. DRIVERS AND TRENDS

How are the parameters and conditions for social cohesion and our work changing over time? What lines can we draw from recent decades to the present and on into the future? To distinguish actual change from mere hype, it is worth looking at the long-term trends.

This chapter provides a brief description of the most important drivers and trends shaping tomorrow’s world of work: digitalisation, which creates new technological foundations and possibilities for collaboration, production, company organisation and the sale of goods and services; globalisation, which – boosted by digitalisation – has significantly expanded companies’ and workers’ sphere of action in recent decades and facilitated cross-border trade and communication, but has also led to a marked rise in migration flows; demographic change, that determines who, and with what skills, can participate in value creation now and in the future; and ongoing cultural and societal change, which is transforming consumption patterns and relationships, among others, and exerts a decisive influence on which innovations are accepted and catch on, and which are not.

The interplay of these developments opens up many possibilities to work differently in future – more productively, flexibly, interconnectedly, internationally. But at the same time, this creates pressure for change, adaptation and innovation, to which we must respond as individuals and as a society, on both the micro and macro level. The more clearly we recognise why and in what shape new developments are emerging, the more purposefully we can shape them in line with our society’s values and rules.

1.1 DIGITALISATION

From papyrus to wax tablets to Word documents, from the horse and cart to railways and motor vehicles to self-driving cars, from the slide rule to punch cards to grid computing – technology has always been a driver of change and societal progress. Digitalisation is at the centre of the Work 4.0 dialogue, currently as its most important driver. It is a buzzword for all of the changes in the economy and the world of work being driven by information technology. As digitalisation is having different impacts in different countries – depending in part on their level of technological development and other characteristics of their domestic economy – the debates about digitalisation in and outside Europe are being conducted in very different ways.

A NEW LEVEL OF DIGITALISATION

Over 80 per cent of workers in Germany currently use digital information or communication technology (ICT) in their work. The transition from analogue to digital technology has been under way since the 1980s; the internet’s triumphant advance began in the 1990s, and the 2000s saw the dawn of the era of mobile devices. We are currently reaching a point where digitalisation permeates much of everyday life, value creation processes and work: the internet allows communication not only between people, but also between things, i.e. objects which transmit data. The technologies driving digital structural change are likely to continue to develop rapidly for the foreseeable future. Such developments are characterised by the fact that gradual improvements lead to tipping points, beyond which a new level of applications becomes possible and enters the mainstream. Experts expect tipping points to be reached within the next ten years in relation to, for example, self-driving cars, complex products from 3D printing, and robots delivering sophisticated services, such as those of a pharmacist.

These changes are affecting almost every sector, every organisation and every worker in Germany.

The digital transformation will, little by little, completely change all functions along the value chain. This applies in particular to development, production, logistics and services.

It is already the case today that points, signals, barriers, vehicles, lifts and stairs transmit information about their status to a central database. Clocking in via smartphone, or buying tickets via video links with ticket centres: workers, machines and products are becoming increasingly interconnected and are communicating in real time. The analogue world is becoming more and more linked with the digital world.

--- » Work 4.0 challenges us all to examine issues in a new light. «
German Engineering Federation (VDMA)

--- » These changes are affecting almost every sector, every organisation and every worker in Germany. «
Confederation of German Employers’ Associations (BDA)

--- » The digital transformation will, little by little, completely change all functions along the value chain. This applies in particular to development, production, logistics and services. «
Robert Bosch GmbH

--- » No process is really new in and of itself. But the depth and pace of change is. «
Industrial Mining, Chemical and Energy Union (IG BCE)

--- » It is already the case today that points, signals, barriers, vehicles, lifts and stairs transmit information about their status to a central database. Clocking in via smartphone, or buying tickets via video links with ticket centres: workers, machines and products are becoming increasingly interconnected and are communicating in real time. The analogue world is becoming more and more linked with the digital world. «
Rail and Transport Union (EVG)

1 Grass/Walter 2016
2 Federal Ministry of Labour and Social Affairs (BMAS) 2016a
Growth in mobile phone usage by 2020

In 2020, more people will have mobile phones than electricity at home

- People with mobile phones: 69% of the global population
- People with running water: 45% of the global population
- People with electricity: 68% of the global population
- People with bank accounts: 58% of the global population
- People with cars: 36% of the global population
- People with landlines: 28% of the global population

Source: Cisco 2016.

The example of the car – the epitome of German engineering skill – offers a good illustration of this permeation and the resulting change in business models. The product is changing in line with the technical possibilities and customers’ wishes: cars are being individually configured and increasingly connected in the Internet of Things, self-driving cars are becoming reality, and individual inspection intervals and remote servicing are possible thanks to new sensor technology and data analysis. The production processes are almost completely connected, collaborative robot systems are entering factories, and additive manufacturing processes such as 3D printing are making extremely small production runs possible. Design and product conception work is being outsourced via digital platforms, and workers have a say on shift assignments using apps. Across all sectors, the question of future competitiveness is also linked to how successful companies are in coping with the digital transformation. The ICT sector is not alone in offering examples of how this can be achieved. In other sectors, too, such as the food trade, companies are successfully tackling digitalisation and building on existing social partnership structures.

The new level of digitalisation is being driven by advances in three areas. First, IT and software: processor performance is continuing to grow exponentially and is facilitating the use of cloud technologies and mobile applications. Learning algorithms now justify the term “artificial intelligence” for applications such as Watson, AlphaGo or Siri. Second, robotics and sensors: as systems become smaller and less expensive, their range of potential applications and usability are increasing, making them interesting for smaller businesses and individual manufacturing as well. Then there are new manufacturing techniques such as additive processes, and improved control and data collection through new sensors. Third, and crucially, connectivity: this is paving the way for the cyber-physical systems which are the basis for Industry 4.0, i.e., networks of small computers equipped with sensors and actuators which are built into objects, devices and machine components, and which can communicate with each other via the internet. On this basis, systems, machines and individual parts continuously exchange large quantities of information and can, to a large extent, autonomously manage production, inventory and logistics. Big Data can also lead to new business models and customer-oriented services (e.g., process and sales planning or predictive maintenance).

THE ECONOMY IN THE MIDST OF CHANGE

The diffusion of digital technologies varies considerably between different sectors in Germany. While the ICT and media industries have undergone several waves of digitalisation and change over the past two decades, this process still lies ahead for much of the manufacturing sector. Whereas cutting-edge technologies are already being applied by half of German businesses, a third of them are yet to look into their use. Across all sectors, the question of future competitiveness is also linked to how successful companies are in coping with the digital transformation. The ICT sector is not alone in offering examples of how this can be achieved. In other sectors, too, such as the food trade, companies are successfully tackling digitalisation and building on existing social partnership structures.
Digitalisation can lower transaction costs and increase efficiency. Many associations of trade and industry and consultancies expect high productivity gains in ICT and the manufacturing sector in the coming years. That said, at present there is still disagreement about the extent to which productivity growth in the digital economy can be shown and measured (see box on “The Productivity Puzzle”). The prerequisite for achieving productivity growth is, in any case, significant business and public investment in infrastructure, technology, work processes and skills.

Alongside traditional companies, startups play a key role as drivers of innovation. Larger companies often buy start-ups to drive innovation, or set up their own departments or subsidiaries as autonomous “labs” to develop and test new ideas. In addition, publicly funded research is of vital significance.

Related to this is the question of what the digital transformation means for competitiveness and employment in high-wage Germany. The German Engineering Federation (VDMA) has argued that the digital transformation will, if successfully managed, help in the long term to maintain the competitiveness of industrial production in high-wage Germany, and to safeguard growth and employment.

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--- » The digital transformation will, if successfully managed, help in the long term to maintain the competitiveness of industrial production in high-wage Germany, and to safeguard growth and employment. «

--- » In the services sector, almost a third of total growth in value added in Germany from 1998 to 2012 can be attributed to digitalisation – in total and in absolute figures, this represents an impressive 95.1 billion euros. The importance of services is increasing as a result of digitalisation. «

United Services Trade Union (ver.di)

THE PRODUCTIVITY PUZZLE

Productivity growth has slowed considerably in many industrialised countries since the year 2000. The fact that digitalisation’s significant growth potential is currently not reflected in productivity statistics is sometimes referred to as the “productivity puzzle”.

The observed sluggishness of productivity growth has strengthened proponents of “secular stagnation”. According to this interpretation, today’s technical progress is merely incremental in nature. The argument is that there are no major developments today on a par with past inventions which led to significant productivity gains, such as the steam engine, the car or the electric motor, because the “low-hanging fruit” of industrialisation has already been picked, and the seventh version of the iPhone simply does not constitute a major leap forward.

In contrast to these “technological pessimists”, the “technological optimists” believe the digital revolution will lead to significant productivity gains in the near future. The weak growth at present is, they argue, a temporary phenomenon and attributable in particular to companies’ investment restraint during the phase when the transformation or shift is taking place from the analogue world to the digital world, in which old business models are becoming obsolete and new business models are requiring high levels of initial investment. In addition, it has been observed that new technologies have not yet become mainstream. Thirdly, it is argued that the statistics are distorted by problems in collecting information – with new goods not yet appearing in the production statistics, while the decline in the production of traditional goods is reflected in full. This is said to be especially relevant with regard to digital goods and services, which have produced welfare gains but whose value is (at present) only partly visible in the National Accounts.

All in all, there should be no rush to conclude that the weaker growth at present means that digitalisation offers little potential for future productivity gains. Moreover, some of the explanations for the slowdown in productivity growth in Germany – growth in employment, demographic change or the “end of the outsourcing wave” – are not connected to digitalisation. The latter could therefore be cushioning the impact of factors which are holding back productivity growth.

10 Rüßmann et al. 2015; Bauer et al. 2014
11 On the significance of public investment for the economic development of new technologies, see also Mazzucato 2014.
12 This term was coined by the economist Alvin Hansen in the 1930s. It refers to a situation where economic growth is approaching a standstill. Today, Lawrence Summers, Paul Krugman and Robert Gordon are key proponents of this theory.
13 See Gordon 2015.
14 See Brynjolfsson/McAfee 2014.
15 Heise et al. 2015.
16 Andrews et al. 2015.
17 Grömling 2016.
1.2 GLOBALISATION

Global trade is not a new phenomenon. Even in antiquity, traders and merchants did business across continents. However, it was industrialisation and the associated spread of new technologies, from railways to steam navigation, which ushered in a massive expansion in the international division of labour and a first wave of globalisation. Today, the term “globalisation” is usually used to refer to the second wave of rapid acceleration in the worldwide flows of goods, services, capital, and people from the mid-20th century onward and in particular since the 1980s.  

The German economy has always been very closely integrated into world trade and global value creation, and this has intensified further over the past quarter of a century. At the start of the 1990s, Germany’s openness ratio (imports plus exports as a share of gross domestic product) was already above 40 per cent. Over the following 25 years, it doubled to its current level of 86 per cent – the highest level among the larger OECD industrialised economies, after South Korea. The McKinsey Global Institute even ranks Germany in top place, ahead of Hong Kong and the United States, in its Connectedness Index, which, in addition to trade, takes into account cross-border financial transactions, data and communication flows and flows of people.  

In the public debate about digitalisation, a distinction is often made between two approaches. In Germany, the focus is on the buzzword Industry 4.0 and new production processes involving cyber-physical systems (Chapter 2.4). Besides manufacturing, attention is also increasingly being devoted to industry support services which use Big Data. These smart services are intended to preserve industry’s value added compared to competitors from the IT sector and to open up new business models. In the United States, by contrast, digital platforms for services are playing a greater role (Chapter 2.2). The “German approach” is often described as more incremental – with gradual changes to existing systems – while the “US approach” is tagged as disruptive – with existing companies and business models being crowded out.

On closer examination, however, this distinction proves to be overly simplistic: digital platforms and their network effects are becoming more important for manufacturers, too. The importance of collecting, analysing and using application data is rising for services and manufacturing. The move by IT companies into producing goods (household goods, media devices, cars in the near future), on the one hand, and the new services which manufacturers are offering (leasing, maintenance, car sharing), on the other, are just a few examples of how the lines are blurring and companies are moving into new markets. In this context, the importance of personal and industry support services is expected to rise significantly in future. The way in which digitalisation shapes our society will be determined by new technologies, as well as by the economic costs of implementation, consumer preferences, societal values, the development of the working world, negotiations between the social partners, and the parameters established by policy-makers. Not every digital platform model, if it is even profitable in the long term, will succeed in a social market economy like Germany.

--- » The German economy’s industrial base is strong and well-placed to profit from digitalisation. «
Confederation of German Employers’ Associations (BDA)

--- » The question is whether the outlined distinction between a German innovation model which seeks incremental process improvements and a disruptive model from Silicon Valley can be maintained in our global world. «
German Trade Union Confederation (DGB)

--- » There can and must be no rose-tinted view of the potential implications of digitalisation. It is essential to be able to set out the risks objectively without being accused of backwardness. «
Marburg Federation of Doctors (MB)

18 Between 1980 and 2008, the real volume of world trade quadrupled, growing twice as fast as world production; see World Trade Organization 2013.

DIGITALISATION AS A DRIVER OF GLOBALISATION

Just as the steam engine was once the technology which drove globalisation, changes in recent decades have been driven by exchange within a global information and communication space. This is clear not least from the increase in digital data flows: while trade in traditional goods and services and cross-border direct investment roughly doubled between 2005 and 2014, cross-border internet traffic grew eighteenfold over the same period, and the bandwidth used has increased by a factor of 44.¹²

On the supply side, companies are increasingly serving a global customer base and are restructuring their work processes and corporate organisation accordingly. They are exposed to shifting market conditions, the influence of financial investors and more volatile demand. One solution used in practice is to increase the potential for greater internal flexibility (e.g. working time arrangements – Chapter 2.5) and to make full use of possibilities for greater external flexibility (e.g. temporary agency work, contracts for work and services) (→Chapter 2.6). Competition is a driver of further innovations, productivity gains, and cost reductions. Businesses and their investor structures are increasingly multinational, whereas decision-making increasingly takes place in a more decentralised manner. Companies are more and more integrated in value networks across the boundaries of their own businesses, while at the same time acting in or organising various regional value chains. Cross-border trade in goods produced in different parts of the world has long since ceased to be globalisation’s only main feature; it is now joined by the global division of labour already during the production of these goods. ²²

Shorter product life cycles and smaller lot sizes, which are transforming the parameters for industrial mass production, mean that flexibility and speed, in particular, are of great and growing importance, while the focus on labour costs is tending to decline by comparison.²² In sectors where the share of labour costs is in retreat as a result of digitalised and automated processes, a “reshoring” of previously offshored production is conceivable. Globally interconnected value creation thus has diverse impacts on investment plans, the development and collaboration of business sites, and on workers’ working and contractual conditions, earning opportunities, the skills they require, and their opportunities for workplace participation. »»

On the demand side, values and consumer attitudes are changing: digital communication can result in the rapid diffusion and transcending of regional and national orientations, but on the other hand it can also reinforce these orientations (→ Chapter 1.4). In parallel with this, awareness of consumption’s local and global impacts on working and environmental conditions has been growing for some years, especially in more prosperous countries, and individuals are increasingly questioning their own consumption patterns in this light.

Facets of globalisation

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Source: Adapted from Manyika et al. 2016.

²⁰ Böss et al. 2014.
²² Coe/Yeung 2015.
EFFECTS OF GLOBALISATION ON THE DISTRIBUTION OF WEALTH

How globalisation trends have affected the distribution of wealth between and within countries is a hotly debated issue. Between 1980 and 2010, the share of developing and emerging economies in world exports rose from around a third to almost half. This went hand in hand with major shifts in the international division of labour. Globalisation in the field of international trade in goods and technology transfer can also open up new employment opportunities for more highly skilled workers in less developed economies. The economic integration of Asian countries, especially those with large populations, has significantly reduced poverty from a global perspective.

In industrialised countries, however, affected by structural change as a result of the relocation of production sites and falling demand for lower-skilled employment, there were also groups which lost out. And in developing countries that were less successful in integrating into global production processes, the economic situation has actually worsened for sections of the population. Overall, income inequality is at its highest level for 30 to 40 years in most industrialised countries. In Germany, it has increased sharply in terms of market incomes in recent decades, although this has been partly offset in terms of net household incomes by means of redistribution via the tax system and social security contributions.

In summary, it is clear that it has long been inadequate to look solely at flows of goods and services when it comes to analysing globalisation trends. The recent refugee flows are far from the first indication that special attention should be devoted to demographic and migration trends. Wherever globally driven structural change and increased international migration flows lead to distributional conflicts, pressure for renationalisation and for the metaphorical drawbridge to be pulled up will not be far behind.

1.3 DEMOGRAPHY AND THE FUTURE LABOUR SUPPLY

The effects of demographic change are already being clearly felt in Germany. While the size of the population has remained almost stable over the past 20 years, the proportion of older people has increased. By the end of the 2020s, almost a fifth of the working-age population will be aged between 60 and 66. The life expectancy of infants born today is 11 years longer than in 1960. At the same time, the number of years in which people enjoy good health is rising. One of the reasons for the ageing population is the sustained low birth rate. Since the mid-1970s, in the wake of the baby boom between 1955 and 1969, women in Germany have been giving birth to around 1.4 children, in statistical terms. As a result, each generation of parents is followed by a generation of children which is a third smaller. An average rate of 2.1 children per woman would be necessary to maintain the population at its current level.

In summary, it is clear that it has long been inadequate to look solely at flows of goods and services when it comes to analysing globalisation trends. The recent refugee flows are far from the first indication that special attention should be devoted to demographic and migration trends. Wherever globally driven structural change and increased international migration flows lead to distributional conflicts, pressure for renationalisation and for the metaphorical drawbridge to be pulled up will not be far behind.

Drivers and Trends

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Addressing the implications of an ageing workforce poses a challenge. It must be ensured that experienced and motivated older workers continue to work productively and with motivation until they retire. This requires a sustainable and forward-looking company policies.

Employers’ Association of Insurance Companies in Germany (AGV)

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Above all, “Work 4.0” means addressing demographic and structural change. We will need all hands on deck, whether employed or self-employed. We need flexible regulations!

23/Apr. 2015 via arbeitenviernull.de

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According to the Federal Statistical Office, the birth ratio is 1.5 children per woman at present (2015).

Despite the increase in female labour force participation, there remains a significant “working time gap” between men and women. Women’s average weekly working time is, on average, eight hours lower than men’s.
LABOUR SUPPLY AND IMMIGRATION

Growing national and international mobility is another factor in demographic change. The difference between the number of people moving to a country and the number leaving it is known as net migration. In 2015, immigration to Germany reached a record high. According to the provisional migration statistics, net migration was 1.1 million, with approximately 2.1 million people coming to Germany and just under a million leaving the country. Between 1990 and 2015, over 280,000 more people came to Germany each year on average than moved away.

Net migration to Germany, 1991-2015

Migration to Germany at present largely consists, alongside immigration from other European countries, of people who have fled their countries. Due to their generally young age – more than half of those who arrived in Germany seeking protection in 2015 are under 25 years old – these migrants have mainly increased the size of the working-age population. Integrating them into the education system and the labour market will be one of the main challenges in the coming years.

THE POPULATION’S SKILLS LEVEL

Another key in preventing shortages of skilled labour is avoiding a mismatch between the demand for skills and its supply. For this reason, the population’s skills level plays a special role in meeting the demand for skilled workers.

The working-age population’s level of educational attainment has risen in recent years: 41 per cent of a school year group now attains the higher-education entrance qualification, compared to 30 per cent in 2006. Women now account for a larger proportion of this group than men.

Breakdown of the population’s educational qualifications by age and gender

It is essential to use the existing skilled labour pool in our population and widen the group of potential applicants as much as possible, especially with regard to foreign nationals. Despite the drama of the situation, the current massive migration of refugees to Germany should be seen as an opportunity to recruit qualified skilled workers among them for the German labour market and permanent employment in Germany.

*dbh – German Civil Service Federation*
Meanwhile, the proportion of those leaving school with a lower secondary school (Hauptschule) certificate is 21 per cent, compared to 27 per cent in 2006. The proportion of school leavers who do not attain a lower secondary school certificate has fallen from eight to six per cent. However, social background continues to exert a major influence over educational attainment. In particular, children with a migrant background remain underrepresented in academic secondary schools (Gymnasien), but account for a higher than average share of early school leavers and school leavers with a lower secondary school certificate. Despite some progress, it is still more difficult for young people with a migrant background to obtain a vocational training place.  

The link between skills level and income is equally clear. According to calculations by the Institute for Employment Research (IAB), workers who have completed a vocational training programme earn, on average, almost a quarter of a million euros more over their entire working lives than workers who do not have a vocational qualification or the higher education entrance qualification (Abitur). Higher-education graduates, meanwhile, earn over 1.2 million euros more, which equates to average lifetime earnings more than twice as high.  

1.4 CULTURAL CHANGE

The transformation of the economy and society is accompanied by changes in lifestyles and values. Important issues in this context include individualisation, changed visions of family life and social cohesion, greater diversity in life plans and preferences regarding work, and new consumer attitudes.

FAMILY MODELS AND TIME-MANAGEMENT NEEDS ARE CHANGING

The transformation of social values and relationships is also reflected in a more partnership-based conception of gender roles. Due to the steady rise in female labour force participation, in more than half of all couples both partners now work, although women often still work part-time. Traditional single-income households do still exist. However, the new normal increasingly also includes households with one and a half to two incomes, and working single parents.

In the course of these developments, individuals’ preferences regarding their own work are also changing. Women and men want to work on a more equal basis, share family responsibilities, and also be able to pursue personal interests. The ties between generations have also changed. When parents and grandparents live in different places, there are huge differences in the extent to which the grandparents are available as a “flexibility buffer” for childcare. At the same time, more children are living at home for longer, and in some cases they are being financially supported by their parents until well into adulthood.

The traditional family model centred around a (usually) male sole breadwinner is becoming less and less common. Ever more young couples want to split the time they spend on family responsibilities and work as equally as possible.

I would like to have more time for my children in future and be able to organise my working hours flexibly. Developing a suitable strategy for this would be great!

Many people find it very challenging to combine work and family commitments in the way they would prefer. This is especially true in life phases with intensive caring commitments, such as when looking after young children or caring for elderly family members.

-- The traditional family model centred around a (usually) male sole breadwinner is becoming less and less common. Ever more young couples want to split the time they spend on family responsibilities and work as equally as possible. — Bremen Chamber of Labour

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Forum for Progressive Family Policy (ZFF)
For the generation of parents aged 30 to 55, who make up almost a third of workers, time becomes a scarce resource as they do their best to combine professional commitment and advancement, bringing up children, and the pursuit of personal interests. This time crunch, which is exacerbated further in the absence of an adequate care infrastructure, is likely to intensify in an ageing society if more and more workers face the additional responsibility of caring for infirm family members, on top of their work and parental responsibilities. Matters which have “traditionally” been of particular importance for workers, such as security and pay, are therefore being joined by the desire for greater time sovereignty.

GREATER DIVERSITY IN PREFERENCES REGARDING WORK

The “discovery” of one new generation after another (such as Generations “X” and “Y”) points to a shift in values. Yet such generalised descriptions of different generations tend to overlook constants: for example, a secure and well-paid job remains the most important aspect which draws on IT-based qualitative interviews with a representative sample of 1,200 working people in Germany. The study “Value Systems in the Context of Work 4.0” (Wertewelten Arbeiten 4.0) highlights the diversity in the reality of workers’ lives and their preferences.

It seems more useful to look at the diversity in workers’ preferences regarding work and the welfare state as a whole. The Federal Ministry of Labour and Social Affairs has therefore funded an unprecedented study, which draws on IT-based qualitative interviews with a representative sample of 1,200 working people in Germany. The study “Value Systems in the Context of Work 4.0” (Wertewelten Arbeiten 4.0) highlights the diversity in the reality of workers’ lives and their preferences.

The study identifies seven typical value systems with discrete perspectives on the subject of work. Sociodemographic characteristics such as age, income or level of educational attainment can only partly explain the respondents’ adherence to certain value systems – unlike in the case of traditional social environments in earlier times. In terms of the attitudes and positions which guide people’s actions, these value systems are in some cases diametrically opposed (see box). Differences exist not just in people’s perceptions of the status quo, but also regarding their views on shaping Work 4.0. What some regard as a desirable future is a threatening scenario for others.

22 To date, it is predominantly women who reduce their gainful employment in favour of unpaid work. The Federal Statistical Office’s 2012/2013 Time Use Survey shows both a gender imbalance in the distribution of paid and unpaid work and a higher overall burden on households with children. Unpaid work accounts for almost twice as high a share of women’s working time as paid work. By contrast, 62 per cent of men’s working time consists of paid work, while unpaid work accounts for just 38 per cent. (Federal Statistical Office (Destatis) 2015a).

23 Bauer et al. 2012.

24 Four out of five people in need of care are cared for at home (Federal Statistical Office (Destatis) 2015b). The rising proportion of people entering higher education means that graduates, in particular, are entering the labour market later in life. It is therefore increasingly common for workers to have to not only begin and advance their careers and start a family simultaneously or within a short space of time, but also to undertake advanced training and care for relatives in parallel.


26 Federal Ministry of Labour and Social Affairs (BMAS)/Nextpractice 2016.
SEVEN VALUE SYSTEMS

Being able to live comfortably from work (28 per cent of respondents)
People who share this value system primarily want to be able to lead a normal life in a secure community without material worries. They see work as part of this, but in some cases they are finding that it takes up so much of their lives that little time remains for personal matters. Being able to plan ahead is a key positive value for them, while they regard a faster pace of work and growing performance pressure as negative. They expect the state to provide a safety net for all those who contribute to society.

Working within a strong community of solidarity (9 per cent)
For people with this value system, an ideal world of work is characterised by mutual loyalty, appreciation for their performance, and participation in a community of solidarity. They find developments within society worrying in some respects. They have the feeling that more and more people are falling through the cracks and are no longer finding a place in society. They long for the days when, as they see it, companies cared about the wellbeing of their staff, there was work for all, and people stood by each other even in hard times. They believe the state and companies have a duty to return to focusing more on the wellbeing of all.

Working hard for prosperity (15 per cent)
A lifetime of hard work is regarded as a given by people who adhere to this value system. They believe that everyone who really works hard can succeed, although they are noticing that this is no longer as simple as it once was. And in their view, those who have made it are entitled to treat themselves to a little luxury. They expect the social partners to ensure that Germany remains strong in economic terms and that high achievers continue to have a home here. They expect the state to create conditions which ensure that everyone who works hard can achieve a certain level of prosperity. At the moment, however, they feel they are not experiencing a sufficient level of success and recognition despite working very hard.

Achieving peak performance via dedication (11 per cent)
For people with this value system, the ideal vision of work is characterised by responsibility, efficiency and striving to perform to the best of their potential. They regard the rapid pace of developments in the economy and society, including those resulting from digitalisation, as a welcome challenge rather than stressful. In their view, it is up to every individual to get to grips with the new challenges, for example through lifelong learning. They expect the state to create conditions which enable individuals to deal with the individual challenges of a changing world of work. They regard these conditions as mostly being in place, as their experience has been that particular dedication leads to personal success.

Finding fulfilment in work (10 per cent)
The ideal work situation for people with this value system is characterised by opportunities for them to constantly reinvent themselves and have many exciting experiences. They see themselves as part of a network of like-minded people, one which stretches beyond Germany. For them, there is no contradiction between personal fulfilment and performance and efficiency. They expect the state and employers to support people on their individual paths, for example through flexibility in working time and location, and comprehensive childcare.

Finding a work-life balance (14 per cent)
For people with this value system, work is ideal if it can be balanced with family commitments, personal fulfilment and involvement in shaping society. At the same time, they expect every individual to show a certain degree of personal responsibility. In their view, society’s purpose is to jointly create good conditions for all. The business and working world should adapt to people’s needs, not vice versa. They are not willing to sacrifice their principles for material security. They therefore expect the state to provide opportunities for effective involvement in shaping society.

Seeking meaning outside work (13 per cent)
The people with this value system do not regard paid employment as the only possible meaningful activity. They measure an activity’s value by its contribution to the common good. They often regard charitable work as more meaningful than work carried out primarily for financial reasons. They expect the state to guarantee all citizens an adequate amount to live on, irrespective of what income they earn in the labour market.
CULTURAL CHANGE AND NEW CONSUMER NEEDS

The new possibilities of digitalisation and the changes in our culture and everyday life are interrelated. Widespread access to information, communication via social networks, the influence of algorithms on our thoughts and actions – all of this will fundamentally change our society. It is not yet possible to say with any certainty whether a “digital culture” is emerging and to what extent it, in turn, will transform the world of work.

What is already clear is that changes in consumer habits are having an impact on working life. E-commerce has radically changed many sectors. As customers, we shape the business and working world through our demand for services which others provide. In some respects, changes in social structures and values are giving rise to entirely new consumer habits and needs, which can in turn be satisfied better or in new ways by the digital economy.

For example, temporary access to and time-limited use of products (e.g. cars) and data (e.g. music) seem to be gaining ground compared to traditional ownership. The desire to lead more sustainable lives and engage in more sustainable consumption is also inspiring a new sharing economy. At the same time, customers expect their needs to be satisfied more quickly in the “on-demand economy”. Both sides of the coin are examined in greater depth in Chapter 2.2. As prosumers or as “suppliers” of data and self-generated content, customers and users are active participants in the process of innovation and value creation.

The implications for society are mixed, with positive prospects in terms of environmental sustainability and economic growth on the one hand, and growing pressure on labour standards and pay conditions and a potential increase in low-skilled work in the service sector on the other. The organisation of the work of the future therefore cannot be separated from the question of what demands we will and should make as consumers.

Greater self-determination in the context of work means shaping working conditions and giving people options so as to allow the emergence of life prospects with self-determined and selectable planning horizons. Associations of Staff Councils of the Supreme Federal Authorities

Cohesion in communities and in society as a whole is not ensured solely by economic goods; a shared stake in cultural goods also plays a part, including a shared experience, perception and organisation of time. German Bishops’ Office

The line between producers and consumers is becoming blurred in the case of prosumers, for example if a consumer uses software to design an individual piece of furniture which is then produced in a digital factory. Bremen Chamber of Labour

Services in the logistics and distance selling sector are in demand around the clock – driven by consumers’ desire to be able to purchase items 24 hours a day with the click of a mouse, and ideally to receive their purchases immediately by express delivery, driven by the competition between individual online retailers to achieve the highest turnover. Social Organisation Germany (SoVD)
CHALLENGES PRESENTED BY WORK 4.0

2.1 EMPLOYMENT EFFECTS: TRANSFORMATION OF SECTORS AND ACTIVITIES
2.2 DIGITAL PLATFORMS: NEW MARKETS AND NEW FORMS OF WORK
2.3 BIG DATA: THE RAW MATERIAL OF THE DIGITAL ECONOMY
2.4 INDUSTRY 4.0 AND THE HUMAN-MACHINE INTERACTION
2.5 FLEXIBLE WORKING TIME AND LOCATION: BEYOND PRESENTEEISM
2.6 COMPANIES: ORGANISATIONAL STRUCTURES IN TRANSFORMATION
2. CHALLENGES
PRESENTED BY WORK 4.0

Based on the analysis of long-term trends and driving forces in Chapter 1, this chapter examines their effects on the world of work and the labour market. Its sections look at fundamental questions and challenges relating to the digital transformation. The impacts on employment, in particular, are hotly debated in the media: will we lose or gain more jobs as a result of digitalisation and automation? Under what circumstances can we tap into new employment? The new developments can be directly experienced through digital platforms, which are changing our everyday lives. But do they fit in with the business and working world of a social market economy, or is there a need for new rules or even a new framework? Digitalisation is based on data which is collected, stored and analysed: it is a new raw material for the economy. Do we need more or less data protection in order to seize the opportunities of Big Data effectively and safely? And who actually owns the data? The relationship between humans and machines is also changing: what will the computers and robots of the future be able to do, and what human capabilities are irreplaceable? Who will give instructions to whom in future? What requirements do companies have in terms of flexibility? How can we use flexibility in working time and location to develop new solutions for a work-life balance and achieve a fairer distribution of paid and unpaid work between men and women, while at the same time avoiding overwork caused by a breakdown of the boundaries between work and private life? Ultimately, answers to all of these questions must be found in practice by companies, which are undergoing a fundamental transformation. They are facing the question of how a company should be organised in a fully interconnected world and what impact this has on how people work together.

The different subchapters first identify what is really new, then go on to examine the contradictions and tensions associated with these developments. What becomes clear is that the opportunities and risks depend on what action we take, and decisions must be taken on the basis of careful analysis and in the knowledge that conflicting aims exist.
2.1 EMPLOYMENT EFFECTS: TRANSFORMATION OF SECTORS AND ACTIVITIES

Overall, developments in the German labour market have been positive in recent years. The global financial and economic crisis was weathered successfully. Skilled migration has so far been able to offset the negative impacts of demographic change. Following a decline in the 1990s and the early 2000s, the labour force has risen by over four million people since 2005. The number of workers in jobs with compulsory social insurance coverage has increased by around 4.5 million in the past ten years to over 31 million people.
The labour share (workers’ wages as a proportion of national income) fell by around five percentage points from the mid-1990s. Real wages initially rose at the beginning of the 1990s but then stagnated until into 2009, and even fell during the intervening period, with significant disparities between sectors in some cases.

Real wages in Germany, 1991-2015

It is only since 2014 that real wages in Germany have risen noticeably again – supported in part by very low inflation. It is not yet possible to put a reliable figure on the impact of the statutory minimum wage. However, workers with below average earnings, in particular, have benefited from much greater increases recently.

Weak wage growth was accompanied by a marked rise in wage inequality. One explanation put forward to account for this is a rise in skills-related wage differences as a consequence of technological progress. Experienced, high-skilled workers benefited, in particular, while low-skilled workers lost out. Other explanations include institutional influences such as the decline in collective bargaining coverage and rising pay differences between individual companies in the same sector. Since 2010, wage inequality has not risen any further, and has even declined slightly at times.

With regard to future developments in the labour market, the key questions are: What will digitalisation’s overall employment impact be? Will jobs be lost? If so, who will be affected? By contrast, in what areas will new jobs be created? The clear answer used to be that low-paid jobs, especially for the low-skilled, would be lost. In the current discussion about digitalisation, however, there is a widely held theory that middle-skilled activities, especially those which are routine-intensive, could increasingly be automated, such as bookkeeping or product testing. While there have recently been indications in Germany of a trend towards a decline in the importance of routine, middle-skilled tasks, there is no sign yet of any collapse in employment in this area.

Current studies are grappling with the question of whether and to what extent technological unemployment will be a key concern in future. Some studies and popular science texts have even reignited the discussion about an “end of work”. They look at digitalisation’s potential for automation and argue that intelligent machines and algorithms will replace most workers in the long term. Technological advances have been sparking similar predictions ever since the invention of the loom.

The much-quoted finding by Frey and Osborne (2013) that 47 per cent of jobs in the United States are at risk due to automation (42 per cent in Germany), assumes everything that theoretically can will in fact be automated, and that all activities required in certain occupations can be automated. In reality, however, only specific individual activities are being automated, not necessarily entire occupations. If this is taken into consideration, around 12 per cent of workers in Germany today hold jobs which are at a high risk of being automated. Again, this is only a potential risk, as there are many legal, societal and economic limits on automation. In addition, workers are adjusting their activities and taking on more complex tasks. Bearing in mind that each year over three per cent of workers in Germany change occupation, and, in the long term, a fifth of workers do not work in the occupation for which they have been trained, puts the predicted impacts on employment into perspective.

--- For years, the insurance industry has seen a decline in the need for simple, routine activities, and a rise in demand for graduates. In the long term, the sector expects digitalisation to result in changes to its workforce structure. 

--- Work 4.0 = Germany running out of work

--- Industrial revolutions have never destroyed jobs on a massive scale. #Industry40 won’t either. #arbeitenviernull

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**Challenges**

They describe an adjustment process which is already taking place, but which will probably pick up momentum.

Several long-term forecasts have already been produced for the Federal Ministry of Labour and Social Affairs regarding the development of the labour market. The current forecast for the period to 2030 calculates and assesses scenarios in order to explore to what extent the digital transformation can be shaped. In methodological terms, the study compares a “baseline scenario”, which assumes slow but steady digitalisation without particular priorities being set, with the alternative scenario of “accelerated digitalisation”, in which policy-makers and the business community take on a pioneering technological role and systematically align education and infrastructure policies with the digital transformation.

The key finding is that, in the baseline scenario, the number of workers in 2030 will be around the same as in 2014, whereas in the accelerated digitalisation scenario, significant positive impacts on growth and employment can be expected thanks to productivity gains. For the German labour market, accelerated digitalisation would mean a continuation of structural change. For example, an additional 750,000 jobs in total would be lost in 27 sectors (e.g. retail, paper and printing, public administration), but this would be more than offset by employment growth of a million jobs in total in 13 sectors (e.g. IT services, research and development). Overall, the labour force could grow by around a quarter of a million people by 2030, with a corresponding fall in unemployment.

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**The German Labour Market in Transformation**

Low-wage employment has risen strongly since the mid-1990s. On the one hand, this enabled many people who had not previously been in employment to gain a foothold in the labour market from the mid-2000s onwards. On the other hand, there has been an increase in the number of workers who are unable to live on their wages, in some cases despite working full-time. The growth in employment since the mid-2000s was accompanied by an increase in non-standard employment. The official statistics define non-standard forms of employment as distinct from the standard employment relationship, including part-time employment of 20 hours per week or less, marginal employment, fixed-term employment and temporary agency work.

### Number of people in standard, non-standard and self-employment, in millions

Based on the concept of the core labour force, figures from 2011 onwards are of limited comparability due to changes in how working status is recorded; there is some overlap between the groups of persons in non-standard employment.

Source: Federal Statistical Office, Microcensus

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47 According to calculations by the Institute for Work, Skills and Training (IAQ), the low-wage threshold of 60 per cent of the median wage was 9.30 euros per hour in 2013. Hence, 24.4 per cent of all employees received low wages in 2013, see Kalina/ Weinkopf 2015.
It is widely accepted that changes in the parameters for temporary agency work and marginal employment have contributed to strong growth in the number of people in these forms of employment. That said, non-standard employment has primarily been entered by people who were formerly economically inactive. Overall, there are more people in both standard employment relationships and non-standard employment today than was the case ten years ago. The proportion of the population aged between 15 and 64 in a standard employment relationship has risen by five percentage points since 2004, while the proportion of those in non-standard employment has risen by three percentage points.

A structural shift is only visible from a more long-term perspective, if one looks at the respective shares of these employment relationships in the total economically active population: Here, the proportion of standard employment relationships fell from 85 to 76 per cent between 1984 and 2013.48

Non-standard employment can act as a bridge to permanent, full-time employment and can – if freely chosen – make it easier to balance work and family responsibilities. It is problematic when it becomes permanent or fails to provide an adequate income for people to live on, and thus involves uncertainty and a greater risk of poverty for those affected.49

In addition to the rise in non-standard employment, self-employment has also increased from around three million to over four million people since the 1990s. The figure soared from 2002 to 2012, in particular, driven mainly by an increase in self-employment without employees, which has been declining again since the beginning of 2012. Various factors have contributed to this rise: the growing importance of the service sector and especially the creative sector, an increase in outsourcing to reduce costs, a liberalisation of trade law, and a period of very difficult labour market conditions which prompted labour-market support programmes to help unemployed individuals set up their own businesses. Since 2012, with the labour market situation improving, there has once again been a decline in the number of new businesses being set up.

The labour market forecast anticipates a significant rise in employment in business services and the social sector, while a decline in employment is expected, among others, in public administration, the hospitality sector, and retail. In most sectors, accelerated digitalisation intensifies the trend of the baseline scenario. This is especially true with regard to IT and business services. In sectors providing equipment for Industry 4.0, primarily mechanical engineering, digitalisation has a positive impact on employment, while the overall trend is negative. The results are similar for the relevant occupational categories.

Other studies on the impacts of digitalisation are not forecasting any significant job losses either (→ box “Further Studies on Employment Impacts”). The forecasts remain vague, however, with regard to specific groups. For example, it is impossible to offer a clear answer to the question of what effects digitalisation will have on women’s employment potential. On the one hand, women are comparatively less affected by impacts on employment in manufacturing, and they are disproportionately represented in occupations in the health, education and social sector, where the potential for automation is more limited, and demand is rising strongly. On the other hand, other occupations with a high share of female employment are in areas where routine cognitive activities can be automated relatively easily (e.g. administrative and office activities, the banking and insurance sector). Other key factors which will determine how the digital transformation influences women’s career prospects are how occupations and the organisation of work change in the course of digitalisation, whether the status of personal services is upgraded, and the extent to which traditional role assignments thus become obsolete. New manufacturing processes also offer an opportunity to move beyond typical gender roles, for example if manufacturing work becomes more process-driven.50

48 See Arnold et al. 2016.
49 The Federal Ministry of Labour and Social Affairs has commissioned academic studies into the short- and long-term effects of various forms of non-standard employment for the Federal Government’s Fifth Report on Poverty and Wealth, which will be published in 2017; see BfA – Ladeuze Institute for Economic Research 2016 and Lower Saxony Institute for Economic Research (NEW) 2016.
50 See Büttner/Marrs 2016.
Besides the possibility of job losses, there is an intense debate about whether far-reaching automation processes could result in employment and wage polarisation. Employment polarisation would occur if middle-skilled employment were hit particularly hard by job losses while the employment of low- and high-skilled individuals simultaneously increased. This shift in demand would also lead to a polarisation of wages. To date, however, there is no evidence of this in Germany, or of any collapse in middle-skilled employment. 51

Employment and wage polarisation would have significant impacts on society, namely a shrinking middle class and rising inequality overall. Forecasts emphasise that action must be taken to avoid such a scenario in future, particularly in the areas of safeguarding employment, securing incomes, and skills development. The aim must be to give the entire labour force new opportunities in the structural change which lies ahead and to enhance their ability to adapt (→ Chapter 4.1). Upskilling at all levels plays a key role in this context.52 With regard to all of the forecasts, however, it should be borne in mind that while they can offer a certain amount of guidance they cannot provide any certainty and are based on past experience.»

51 See Dengler/Matthes 2015; Dustmann et al. 2009; Antonczyk et al. 2010.

--- » While great caution is needed in interpreting forecasts, one important question for the future will be how the transition to an Economy 4.0 can be prevented from leading to a further polarisation of the labour market with growing income inequality, or, if this cannot be prevented entirely, how the effects can be cushioned in social terms. «

Social Sciences Institute of the Evangelical Church in Germany
Challenges

2.2 DIGITAL PLATFORMS: NEW MARKETS AND NEW FORMS OF WORK

We are currently witnessing how the basic digital innovations of recent years – smartphones, mobile internet, cloud computing – are being combined and turned into one new business model after another (→ Chapter 1.1). For many people, these technologies are already part of everyday life. They use search machines, upload their own videos to platforms, listen to music from the cloud and buy things online.

The term “platforms” is used as a general label for these new business models, which act in – sometimes global – multi-sided markets. Such platforms act as an intermediary between groups of users within an overarching “ecosystem”. These groups can be providers and consumers of mobility services, holiday homes or web development services, for example. The following differentiation seems useful:59

54 Hammermann/Stettes 2015.
56 Gregory et al. 2015.
57 Federal Ministry of Labour and Social Affairs (BMAS) 2016a.
58 Dengler/Matthes 2015.
59 Similar distinctions are found in, for example, Leimeister et al. 2016a.

Markets and New Forms of Work

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● **Social communication platforms** (such as Facebook, Xing, or Twitter), which are intermediaries for personal information, such as messages, photos, and audio and video recordings, and which facilitate communication between users.

● **Digital marketplaces** (such as eBay, MyHammer or Kleiderkreisel), which offer a virtual location for providers and consumers to find each other, without the platform operators intervening directly in the transactions. This category also includes non-commercial sharing platforms, in the narrower sense of the word, which facilitate collective use of goods or infrastructures.

● **Intermediary platforms** (such as Uber, Helpling or Airbnb), which intervene in the interaction between market participants to varying degrees, for example by setting rules on prices and the specifics of the products or services being traded. Thus, they are not pure intermediaries. This category includes, in particular, service platforms in the “on-demand economy”, with services usually being carried out on-site.

● **Crowdworking platforms** (such as Upwork or Amazon Mechanical Turk), which function as intermediaries for clearly defined packages of digital work, often based on open requests.

These types of platforms are very rapidly transforming markets and market structures. They have a high growth potential due to the very low marginal costs of an additional user of digital goods and services (scale effects) as well as the increase in their attractiveness for other users with every additional user (network effects). However, this growth in users is not necessarily mirrored by an increase in the number of people directly employed by the company which runs the platform.

Platforms for on-demand services and crowdwork do not usually see themselves as employers, but rather as pure intermediaries which facilitate market transactions, and as technology providers which lower users’ transaction costs. It is therefore widely expected that the platform economy will lead to an increase in self-employment, especially solo self-employed persons, who can offer their services and products simply and inexpensively via platforms. While there have been very dynamic developments in this area in the United States in recent years, this has not been the case in the German labour market so far.

At the moment, it is difficult to say how important digital platforms are for value creation and employment in Germany, as the necessary data is not available. Figures for secondary activities or solo self-employment based on representative surveys do not indicate a rise in self-employed activities in Germany so far. Nor can the information provided by individual platform operators be combined to produce reliable data.

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"The spectrum stretches from the “after-hours” crowdworker, who performs small digital jobs after finishing work for the day, to people offering comprehensive services – often in the creative sector – to shifting groups which carry out complex tasks with decentralized skills."

German Association for Social Security Research and Policy (GVG)

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"The software company Intuit predicts that freelancers will account for around 40% of the US labour market in 2020. The share will not be as high in Germany, but nor will we escape the general trend. All stakeholders must therefore take this trend into account and develop resilient, flexible and open models for the organisation of work which support solo self-employed individuals even during economic crises."

Alliance of German Designers (AGD)

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60 Most platforms stipulate in their conditions of use that the registered service providers are self-employed (independent contractors). The issue of “misclassification” is being hotly debated in the United States. See Schmidt 2016.
When it comes to the digitalization of the world of work, crowdwork is one of the most hotly debated topics. The impacts for workers are quite different from those in the context of Industry 4.0. Tasks are outsourced to a large number of people (the “crowd”) by posting requests online. Registered crowdworkers then carry out these tasks. There are competition-based models, where only a single solution is accepted from all those submitted, and collaborative models, where tasks are carried out jointly or via a division of labour. Views on the pay and working conditions involved often differ very widely. In cases where crowdworkers act as self-employed workers, the situation has both advantages and disadvantages: a high level of self-determination, but at the same time often a high degree of economic uncertainty regarding employment and income.

Yet there is not just one form of crowdwork – the spectrum ranges from clickworkers who carry out simple tasks for a few cents, to demanding and well-paid activities such as in IT development or testing. The more granular activities and work packages are, the more likely they are to be outsourced and – provided that they can be digitalised – “crowd-sourced”. In some large companies, internal crowdworking takes place. In this case, individual branches, teams or workers compete against each other.

A representative survey of companies in the information industry has shown that three per cent of companies in this sector are currently making use of crowdworking, in the sense of crowdsourcing. The level of use has barely changed in comparison with 2014. As work in the information industry is comparatively well-suited to being divided up and parcelled out online, the level of crowdworking in other sectors is likely to be even lower.

In the debate on the effects of digital platforms, key players in the business community advance the view that platform monopolies cannot be avoided. In fact, they argue, monopolies are desirable both in business terms and for society. Banning monopolies would mean preventing technological progress. They regard “winner takes all” as the principle for success in the digital economy, where avoiding “perfect competition” – at least for some time – increases the benefits for customers.

On the other side of the debate, the term “platform capitalism” has gained wide currency. It is argued that a new form of capitalism is emerging in which the major platform operators are setting the rules and undermining existing standards of protection and worker participation rights. Those who hold this view argue that digital platforms are exploiting their market power in an unacceptable manner. Forms of social coexistence which used to be organised differently, for example with neighbours and friends helping each other, are being subjected to market mechanisms, they claim, and digital platforms are commercialising the private sphere.

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Ideally, there should be a more nuanced analysis of the transformation of work by sectors, occupations or fields of work. An industrial worker who has to get used to having robots as "colleagues" on the shop floor is affected by the transformation of the world of work in a different way to a freelance software programmer who increasingly finds that relevant work is being allocated via crowdworking platforms. Federal Association of Human Resources Managers (BPM)

Crowdworking and click-working may be of interest for schoolchildren or students who want to earn some pocket money on the side, and for entrepreneurs who want to gain knowledge at many people’s expense and earn money by taking this approach. In my opinion, you can’t support a family with this kind of work.

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See, for example, Leimeister/Zogaj 2013; Berner 2014.

It is important to recognise the opportunities offered by these new ways of organising work. They lower barriers to entry, and SMEs in rural regions which find it difficult to recruit and retain skilled workers can particularly benefit from these approaches. Association of German Chambers of Commerce and Industry (DIHK)

The survey was carried out in the third quarter of 2016. It showed that only 1.2 per cent of manufacturing companies use crowdworking. Öhremus 2016.

Thiel 2014, for example.

Lobo 2014, for example.

See Leimeister et al. 2016b.
A third position emphasises the possibility of a more sustainable, solidarity-based and democratic economic order. Proponents of this view argue that the possibility of greater sharing and joint use of resources means that ownership is losing significance, the sharp distinction between producers and consumers is becoming blurred, and innovative means of production are no longer reserved for large, financially strong companies.

Challenges and tensions

Regarding digital platforms, one area of tension concerns the network effects described above: the more users a platform has, the more rapidly it becomes a standard, as rising demand leads directly to an improvement in service and so attracts further customers. While this means that the platform becomes more useful for the providers and consumers using it, it also means that there are significant barriers to entry for competing platforms. This is due to the fact that the centralisation of previously decentralised marketplaces promotes the development of dominant market positions.

Another key dilemma for providers of services for which digital platforms act as intermediaries is the fact that the increase in autonomy is accompanied by an increase in uncertainty and dependence. As platforms lower the transaction costs between market participants, they make it easier for individuals to become self-employed. This opens up new employment and income possibilities for people who want to work more autonomously or who have previously been unable to participate in the labour market. The operators of digital platforms emphasise that many of their service providers are motivated to work on the platform because it offers greater scope for entrepreneurial decision-making and a better balance between work and personal commitments.

Platforms offer many benefits for customers. But they also offer self-employed workers, as suppliers or contractors, simple access to markets and in some cases niche markets, also known as the “long tail”. There is also talk of a new movement of “makers”. These include producers and traders who sell through these platforms, or app programmers. On the other hand, platforms for on-demand services and crowdwork can result in standard employment being replaced by insecure employment. In the United States, where this trend is further advanced, a discussion is taking place about a “gig economy” in which employment takes the form of short “gigs”, and the platforms’ terms and conditions and rating systems leave workers little freedom, even though they are formally self-employed. Due to fluctuating levels of work and a high level of social insecurity, those providing services are at high risk in the event of accidents, illness and unemployment, as well as in old age and in the event that they require long-term care. In addition, wage and salary employees have (protective) rights which do not apply to self-employed persons.

Compared with wage and salary employment, platforms most likely result in a transfer of risk from companies to self-employed suppliers. That said, highly specialised and well-paid experts, for example in the field of programming and design, have a different level of bargaining power than people offering to perform less skilled work.

At present, it is impossible to foresee to what extent digital platforms will replace work with compulsory social insurance coverage with new, insecure forms of employment. It will depend above all on whether platforms engage in unfair competition with regulated services by systematically circumventing applicable quality standards and rules governing the protection of workers and consumers, or even liabilities for tax and social security contributions. The key question is to what extent platforms are exploiting legal grey areas regarding the status of workers in order to cut costs and thereby gain a competitive advantage over existing companies. The need for action resulting from this is examined in greater detail in Chapters 4.3 and 4.7.

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66 Rifkin 2014, for example.
67 The Green Paper on Digital Platforms published by the Federal Ministry for Economic Affairs and Energy (BMWi) (2016) discusses how a balance can be found between the necessary parameters.
However, new and innovative business models which are currently emerging should not be stalled by premature regulation without a proper assessment of their development potential and effects. Digital platforms can produce important economic and social benefits. The crucial question is what those platform-based business models could look like – whether commercial or, for example, cooperative-based – which are compatible with the principles of the social market economy (Chapter 4.3).

2.3 BIG DATA: THE RAW MATERIAL OF THE DIGITAL ECONOMY

A heartbeat registered by an ECG, a whisper over the telephone, a swipe across a smartphone, an item scanned at the supermarket checkout: every movement, touch, sound and image which is recorded by a sensor or camera generates machine-readable data which can be stored, analysed, disseminated and even sold. The principle is not new. What is new, however, is the sheer volume of data available today due to constant improvements in technical collection and storage possibilities, as well as the “intelligence” and speed of data analysis. Big Data is a gigantic and rapidly growing volume of unstructured mass data produced by numerous decentralised sources. Data mining, i.e. the use of powerful computers and suitably programmed algorithms to carry out a targeted search for usable information in the mass of raw data, can “see” connections between different datasets and compare them – even in real time – making it possible to identify previously unknown patterns. In the case of personal data, the analysis can help to identify individuals or groups of people who fit certain criteria or behave in a certain way, in order to draw conclusions regarding their future behaviour: the likelihood that they will buy products or services they are offered, make certain decisions or take action in defined situations.

A lot of new business models are based on people voluntarily providing their personal data when using online digital services, for example a navigation system, a health app or a discount card, or when visiting e-commerce, communication or work platforms. It is not just people themselves who provide their data, but increasingly also the items they own: data can be collected and transmitted not only by smartphones or fitness wristbands, but also by cars, heating systems or electric household appliances.

Commercial Big Data applications seek both to identify an individual’s preferences and to ensure that planning takes place on the basis of more reliable and the broadest possible data: in connection with the organisation of mass communication, for example, or the management of complex technical processes in industrial production, the energy sector or transportation.

The more the economy and public administration are digitalised, the more data that can be related directly to employees is collected and stored. The whole spectrum of human resources management – from the application process, to time and attendance recordkeeping, to performance evaluation and payroll – is administered digitally in most organisations. People who work with digital applications constantly produce data which enables almost all behaviour at work to be observed, recorded or reconstructed. In the case of office jobs, it is possible – at least in theory – to fully document and analyse every keystroke, every save or deletion, every online search, and all communication, for example by email.

As digital applications become more widespread in industrial processes, commerce and logistics, more data is being produced in these areas too. RFID technology allows employees’ location on the site to be pinpointed and their identity to be determined via their company ID cards, chips sewn into their workwear or suitably equipped tools. GPS can be used to locate external workers, for example in logistics, at any time. Mobile devices provided by the company allow all user activities to be recorded. Data glasses, data gloves and smart tools register every step in the work process. Machines check that work – maintenance work, for example – is performed correctly.

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Challenges

While much of this personal data is simply a by-product generated while carrying out work, there are increasingly also applications which can only function properly if they can access a personal user profile. Such applications can be used to support people, for example in the case of digital assistance systems which can adapt to the needs of people with disabilities or draw attention to poor posture, or location tracking systems which help users to avoid unnecessary travel time on a company’s site or in traffic.

Challenges and tensions

Like all technical progress, digitalisation has both advantages and disadvantages. This is also reflected by the debate on Big Data: on the one hand, it offers significant benefits for companies, public administrations, the health system and society as a whole. On the other hand, new risks are emerging, linked to ethical and legal questions as well as challenges to data security and protection. These risks fuel old fears of total surveillance and a loss of privacy and freedom.

Big Data is based on models and algorithms which analyse past data, identify connections and use them to make predictions. Such complex models are prone to error; for example, they can suggest false connections, interpret variables incorrectly or imply clarity where none exists. There is also a danger that the results can be misinterpreted. Risks arise as well where people and social relationships become the subject of analysis, ratings and forecasting: firstly, people can be manipulated more easily when their preferences are known and their behaviour can be predicted, and, secondly, there can be feedback effects once people begin to adjust their behaviour in response to analysis tools, for example to receive the best possible ratings.

Data security is becoming a key problem for companies and society. While in traditional data processing, customer data was held by banks, insurance companies, public administrations or companies in databases hosted separately on local servers, mass data today is generated in large volumes via internet-based communication and stored in clouds. This makes it easier to input data from the network, merge data from different sources and access it from different locations. At the same time, however, data security requirements are rising in order to effectively counter the dangers of unauthorised access and data misuse. Many companies have to invest in expensive network security architectures in order to protect their company secrets, their expertise and customer and employee data from industrial espionage, attacks by hackers or sabotage. The state also needs to take steps in this context: the greater or more central...
Electronic control of civilian or military infrastructure becomes possible, the more vulnerable society becomes. Cyber-attacks on information infrastructures in Germany and abroad have become more common, complex and professional in recent years. 

Citizens have their own responsibility in this context. On the one hand, they must feel reassured that services they use online are secure; but on the other hand, they also have to take responsibility for deciding who to trust, which applications to use, and what data to provide. The fact that people have limited choice in these matters within a company context makes employee data protection an especially sensitive subject.

The fear of total surveillance and loss of privacy is deeply rooted in Germany, partly as a result of historical or personal experiences of totalitarian states. In the era of Big Data, very extensive monitoring is possible. State regulation of data protection is therefore needed on the basis of an intensive public debate about what should be permitted. This regulation must clearly specify the limits of what may be monitored, and by whom. At the same time, however, the advantages of Big Data should be realized and business models which are based on the analysis of Big Data should not be made impossible in Germany.

There is a tension between data protection and economic interests, which might be partly resolved to the degree that a higher level of data protection becomes a competitive advantage.

Silicon Valley’s protagonists, whose companies are home to a great deal of the data collected worldwide, often do little to allay people’s fears. The “totalitarian tendencies” of Silicon Valley are not inherent in the technology; instead, many of the business founders based there pursue ideological as well as economic aims and have a vision of a new “post-privacy” era.

In Europe, by contrast, there is a broad consensus that trust in the security and protection of personal data is a fundamental prerequisite for a peaceful and successful digital transformation. An important first step has already been taken: in April 2016, the European Parliament and the Council of the European Union adopted the European General Data Protection Regulation, which creates an equivalent level of legal protection for all people in the EU regarding the collection and processing of personal data. This makes it easier to deal with data and data protection in the European single market, which had previously been complicated by a patchwork of 28 national data protection laws (→ Chapter 4.5).

2.4 INDUSTRY 4.0 AND THE HUMAN-MACHINE INTERACTION

The use of pulleys in early antiquity or the Babylonians’ use of pumps to irrigate fields can be regarded as early examples of human-machine interaction. However, the way in which people and machines interact with each other has undergone repeated changes ever since. Neologisms such as “Industry 4.0” or “cyber-physical systems” describe the most recent paradigms in industrial production (→ Chapter 1.1). At the same time, they encapsulate a qualitative leap forward in the collaboration between humans and machines. The digital interconnectedness of all workers, tools and workpieces in the production process and across company boundaries is generating an “Internet of Things” and People”. Highly developed sensors make it possible for people and robots to work together in ever closer proximity, as machines are able to register their users’ behaviour with ever greater precision, thanks to technologies allowing better speech and image recognition, emotion detection, and the registration of eye movements and gestures.

--- » Digitalisation is boosting both the quantity of data being collected and processed (“Big Data”) and its quality (“Smart Data”). Such huge quantities of data must be organised and managed, on the one hand, while on the other hand security issues are becoming more relevant. «

--- » Increasing digitalisation is forcing many SMEs in the liberal professions to draw on the expertise of external IT service providers instead of having in-house staff for this. The resulting possibility for third parties to learn confidential information entrusted to a member of the liberal professions by clients or patients offers a high potential for conflict. «

--- » Technology must make people’s lives easier. «
Human-machine interaction is taking on a new dimension due to developments in the field of artificial intelligence (AI). Self-learning algorithms (machine learning) and the parallel analysis of vast quantities of information (→ Chapter 2.3) are enabling AI applications to adapt to people in line with the situation at hand, and to carry out a large number of complex tasks in close collaboration with them. Although practical implementation has not yet been achieved in some areas, there are signs that this has significant potential to transform everyday working life, both in industry and in the service sector, where knowledge-intensive occupations will be particularly affected.

In industrial manufacturing, a new generation of robots is emerging with progressive advances in AI. While in recent decades robots were primarily used to automate simple production steps, the latest industrial robots are now also capable, thanks to AI-based high-performance sensors, of taking on fine-motor tasks and interacting directly with their human co-workers. These “cobots” (short for “collaborative robots”) perceive their surroundings in diverse ways, paving the way for safe physical human-machine collaboration. The previous spatial separation of people and robots is becoming irrelevant; the machines are leaving the “cage.” Cobots are also easier to programme than their predecessors and are often equipped with self-optimising algorithms, enabling them to learn from their human colleagues.

In the service sector, too, a wide range of possible uses are opening up: for example, new high-performance speech recognition and text processing applications are now allowing simultaneous spoken translation, the automated production of complex standard texts and simple correspondence, or the analysis of large volumes of text for legal purposes. In medicine, intelligent image recognition software can vastly improve the diagnosis of many diseases and boost doctors’ capabilities. In the long-term care sector, interactive systems are being trialled which are designed to enhance the mental and emotional well-being of older and elderly people. In short: whether in industrial, service or knowledge work – digitalisation is transforming the entire socio-technical system of people, process and technology (→ diagram).
At the intersection of people and technology, functions will be assigned in new ways on the basis of situational and specific strengths. At the intersection of process and technology, hierarchically separated subprocesses which have previously taken place in sequence will be replaced by integrated, simultaneous and decentralised processes. And at the intersection of people and process, the question of how tasks are delineated and roles assigned arises anew. The transformation of human-machine interaction thus offers new opportunities to shape work and production processes, relieve workers of routine activities, develop workers’ skills and, not least, make it easier to achieve a good work-life balance.66«

Shaping human-machine interaction in an appropriate way in which older workers can make an important contribution to securing Germany’s supply of skilled labour. Non-ergonomic jobs can be replaced and people can be relieved of the burden of carrying out tasks which are physically demanding, involve difficult motor activities or are psychologically stressful. This can prevent unhealthy physical and psychological strain. «

This also opens up new possibilities for participation in work, as assistance systems can help to compensate for physical or sensory impairments. Older workers can work for longer and more healthily, and people with disabilities can take on jobs which were hitherto closed to them. «

Looking to the future, intelligent tutoring systems could facilitate a much higher level of learning in the working process. Tasks can be designed and allocated in such a way as to take into account and systematically support the individual physical and mental capabilities of the person working with the autonomous system. Meanwhile, the degree to which work is tied to machine cycles is declining as greater flexibility is introduced and work processes become more integrated, while the possibilities of human-machine interaction independent of location are increasing. This can make it easier to balance work and personal commitments. «

Challenges and tensions

However, interacting in and with complex and increasingly autonomous systems also poses challenges. Several areas of tension can be identified:

Firstly, there is a tension between upskilling and deskilling. The specific design of human-machine interaction can “enrich” activities for workers by making them more complex and introducing a greater level of responsibility, with the machine providing assistance in dealing with the new range of tasks. However, it can also lead to once complex activities being simplified and completely standardised so that they only require a low level of expertise and experience, for example if the worker receives an instruction for each work step or merely responds to set signals, with many of his or her skills going unused.»

Both scenarios can result in new risks of unhealthy psychological and physical strain, for example if the work environment is largely automated, leaving only monotonous leftover activities to be carried out by people. Alternatively, working in complex, integrated and autonomous systems could lead to a high level of work intensification and a far-reaching breakdown of the boundaries around work, with the risk of new psychological strain.  

A second area of tension relates to the importance of experience. If the growing capabilities of autonomous systems increasingly relegate humans to the role of overseeing automated processes, staff have little chance to gain experience in the working process. The “irony of automation” is that automation actually results in the person overseeing the process becoming less and less capable of solving problems in the automated system – problems which, while increasingly rare, continue to occur. And yet it is precisely when something goes wrong that people are needed who know from experience how to deal with problems in autonomous systems via communication with the machines. The challenge is therefore to ensure that systems based on artificial intelligence do not devalue skilled workers’ necessary knowledge and experience.69»

1 Pfeiffer 2015.
2 Steiermann et al. 2015.
Another area of tension is the need to weigh the possibilities for individual support and behavioural monitoring against each other. Data which was initially generated for the purpose of process optimisation can also be used to monitor performance or behaviour. The closer the integration between humans and machines in performing work, the more staff become locatable, and their performance and work behaviour documentable (→ Chapter 2.3). If robots are to respond to a worker’s actions and, for example, move away to avoid injuries, this not only requires suitable sensors but also data about the worker’s movements and location. Autonomous warehouses need to know at what intervals workers call up the next workpiece. “Smart” gloves and data glasses can only support an unskilled warehouse worker effectively if certain data is available about the employee and the work to be performed.

What will become reality in the world of tomorrow depends not only on technical feasibility and economic profitability, but also on how society negotiates and shapes developments. Two scenarios are conceivable. 84 In a highly technology-centric scenario with extensive automation of many work processes, the “human share” would be reduced to activities which cannot or should not be automated for technical, socio-economic or ethical reasons (e.g. activities in the field of long-term care). One conceivable consequence would be highly polarised organisations with a small number of workers carrying out simple tasks which would be mainly determined by others, and a group of highly skilled planners whose skills would be significantly above the current level for skilled workers.

What is equally possible, and preferable from society’s perspective, is a human-centric scenario, in which people remain the managing and decision-making authority and the repository of experience, while their role in the working process is upgraded via smart tools and assistance systems 85. Looking to the future, the separation between management and execution could be eliminated and replaced by a loose network of highly skilled workers taking action on an equal basis. This requires, not least, an upgrading of skills in all business areas, however.

The reality of Industry 4.0 and the Internet of Things will usher in a wave of implementation. For business reasons alone, the scenario of extensive automation is likely to be rare in practice. Key factors in ensuring that implementation is successful include the continuation of an intensive debate in society and in the workplace about the aims of the use of digital technologies and intelligent machine systems, and a lively culture of participation and continuing vocational training which enables workers to put their experience and process knowledge to use in designing the arrangements for technology use, but also to assert their needs as users. 86

--- » In organisational terms, the question is how much space remains, as efficiency and automation increase, for resilience in companies; what happens, in other words, if a highly automated system malfunctions and targeted intervention is necessary to return the system to a safe operating status. «

Institute of Industrial Engineering and Ergonomics (IAW) at RWTH Aachen University

--- » The digital workflow can provide support by integrating work processes and dealing with high-volume activities, but artificial intelligence cannot replace the empathy human supply. In an area as sensitive as social insurance, there is a human life behind every ‘file’. And this person will continue in future to need a human being who can offer him or her guidance and advice on social security matters. «

Social Insurance System Trade Union – Women’s Representation

--- » Over the life course, a wide variety of events can require people to shift their work-life balance and can mean that they desire or need flexibility, especially in terms of their working time. «

Hans Böckler Foundation

--- » In light of demographic change, people must be able to organise their working time flexibly when they are planning and starting a family. «

Association of German Cities
Modern means of communication make flexible working arrangements possible, which allows working time to be organised in new ways. This will make it easier to accommodate the needs of organisations and workers in designing flexible working hours.  

Work 4.0 fulfils workers’ desire for greater working time sovereignty. This is positive from the employer’s perspective, too. For example, greater flexibility has the advantage that work can be better carried out at short notice, and travel time can be used more efficiently by working on a laptop. In addition, flexible working arrangements are beneficial in retaining skilled workers and recruiting new staff.  

In skilled crafts, despite digitalisation, the worker’s presence at the customer’s site or the location where the work is to be performed will, in practice, remain an essential part of our work.  

The trend towards working time flexibility and decentralised work locations is continuing in the context of digitalisation (→ Chapter 1.1). Broadband internet, network technologies and mobile devices mean that tools and content can be accessed from anywhere, around the clock.  

Digitalisation can facilitate flexibility in both directions: supporting companies’ needs regarding the organisation of work, but also supporting workers’ needs and preferences. The possibility of working from home can also be extremely convenient for people with reduced mobility. What impact digitalisation will have in practice and what potential can be realised depends on the specific technical implementation, individual usage, and how it is incorporated in the workplace, in legislation and collective agreements. The specific circumstances in individual occupations and sectors also play a major role. To learn more about what issues are of particular importance to workers, companies as well as staff representation bodies are carrying out employee surveys and feeding the results into the ongoing discussion about how to shape these developments.  

Changes in customer needs and value creation processes were an important reason for greater flexibility in the recent past. Greater use of external (e.g. temporary agency work, contracts for work and services, outsourcing) and internal (e.g. working time regulations) potential for higher flexibility is increasing the demands placed on workers and contractors in terms of time flexibility and mobility (→ Chapter 2.6). One in four workers works in the evening, while one in ten works at night. The figures are similar for work on Saturdays (26 per cent) and Sundays (14 per cent). Compared to 1992, there has been a significant overall increase in the proportion of workers who work in the evening, at night and on weekends (→ chart).

Locational flexibility, with shifting places of work, is also standard for many workers, for example in the case of maintenance, servicing and installation work or sales work. Around one in five workers in Germany travel for work-related reasons, whether by changing their place of residence for work, or in the form of long-distance commuting, business trips, travel to meet customers or travel to attend meetings and trade fairs.  

New flexibility compromise: people already work flexibly. Nowadays, both partners work. Not necessarily in exchange for more time for personal matters or more money. When will companies give something back?  


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Prevalence of evening, night and weekend work

<table>
<thead>
<tr>
<th>Year</th>
<th>Evening work</th>
<th>Night work</th>
<th>Saturday work</th>
<th>Sunday work</th>
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<tbody>
<tr>
<td>1992</td>
<td>10%</td>
<td>5%</td>
<td>20%</td>
<td>25%</td>
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<tr>
<td>2014</td>
<td>15%</td>
<td>10%</td>
<td>30%</td>
<td>20%</td>
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The figures are similar for work on Saturdays (26 per cent) and Sundays (14 per cent). Compared to 1992, there has been a significant overall increase in the proportion of workers who work in the evening, at night and on weekends (→ chart).

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<th>Challenges</th>
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Two-thirds of all white-collar workers are at least occasionally reachable at home. Even among blue-collar workers, the equivalent figure is just under 50 per cent, and the level of reachability has increased for both groups in recent years. See Federal Ministry of Labour and Social Affairs (BMAS) 2015c.

Federal Ministry of Labour and Social Affairs (BMAS) 2015c.

Federal Statistical Office (Destatis)/Berlin Social Science Center (WZB) 2016, p. 137–138. According to the 2016 report published by the Federal Institute for Occupational Safety and Health on working time in Germany, working at the weekend on a regular basis is widespread today and affects 43 per cent of employees, with a roughly equal divide between workers who only work on Saturdays or who also regularly work on Sundays and public holidays (Federal Institute for Occupational Safety and Health (BAuA) 2016a, p. 41).

Regarding mobility for work, see Ruppenthal/Lück 2009; see also the 2007 Good Work Index produced by the German Trade Union Confederation (DGB). Regarding the growth in business travel, see the analyses of business trips produced by the Business Travel Association of Germany (VDR); regarding trends in the posting of workers, see Hopfield et al. 2013.
Besides technological changes, cultural and societal changes also affect the issue of flexibility: people’s life plans have become more individual and diverse, traditional role conceptions are dissolving, and values and preferences regarding work have changed (→ Chapter 1.4). Many workers would like to have more sovereignty to achieve a better work-life balance. Many employers are already responding to workers’ need for greater autonomy with regard to when and where to work, for example by individual working time models, long-term accounts, sabbaticals or homeworking options. Nonetheless, many workers’ wishes regarding the length and scheduling of their working time and homeworking remain unfulfilled. According to the working time calculations published by the Institute for Employment Research (IAB), almost a billion hours of unpaid overtime and around 800 million hours of paid overtime are currently worked per year in Germany. In addition, holiday entitlement is not fully claimed: a study by the German Institute for Economic Research (DIW) finds that in 2010 around 37 per cent of full-time employees did not take the full amount of holiday time to which they were entitled in the previous year. According to the study, around twelve per cent of the total holiday entitlement was not taken.

According to the Working Time Report Germany 2016 published by the Federal Institute for Occupational Safety and Health (BAuA), full-time employees work 43.5 hours per week on average, almost five hours more per week than contractually agreed. More than half of the part-time workers who would like to increase their hours. Women account for 84 per cent of the part-time workers who would prefer to work longer hours. Women account for 84 per cent of the part-time workers who would like to increase their hours. As long as employers basically insist on excessive punctuality and overtime, flexible working hours are a utopia. "arbeitenviernull "

Many workers are also dissatisfied with the scheduling of their working time. Even a small shift in when working hours begin or end, or the choice of certain days, can determine whether a (full-time) position is compatible with, for example, a day-care centre’s opening hours, the time when a carer arrives, continuing training or volunteer work. According to a survey carried out for the Federal Ministry of Labour and Social Affairs, 37 per cent of workers would like to change the scheduling of their working time. This is in particular workers who are required to be reachable outside working hours, who work in the evenings, at night or at the weekend, who have to be on call, who work shifts or have staggered work schedules, who are not allowed to take longer breaks, who are in fixed-term employment, or who do not have flexitime and/or a long-term account.

When it comes to the choice of working location, the preferences of many workers currently remain unfulfilled. Germany is lagging behind other European countries (especially Denmark, Sweden, the United Kingdom and the Netherlands) when it comes to working from home. Yet there is demand: almost 40 per cent of white-collar workers who currently lack this option would like to work from home regularly or occasionally, including a disproportionately high number of parents with children under the age of 34. Furthermore, working from home can give people with disabilities new opportunities in the labour market. It can also open up new career prospects for people in lagging regions.

--- As long as employers basically insist on excessive punctuality and overtime, flexible working hours are a utopia. "arbeitenviernull "

--- Tomorrow’s workers will autonomously and responsibly organise when, where and how to carry out their work in line with their own interests and needs and the requirements of the type of work in question. " Robert Bosch GmbH

--- Many companies now have flexible working time models or support workers in balancing demands on their time in other ways, and this plays a key role in securing skilled labour. " Association of German Chambers of Commerce and Industry (DIHK)

--- So far, relatively little use is being made of models such as working time accounts, which enable workers to save up time that they can take off in future, e.g. for a sabbatical or at times when they have family or caring responsibilities. " German Confederation of Managers (DIFK)

88 Working time accounts exist in 89 per cent of companies (survey of 1000 human resources managers; Randstad-Flexifyondex, 2016) and employees are offered the option of working part-time in 81 per cent of cases (survey of 700 companies, Chamber of Commerce and Industry of the Stuttgart Region [DIHK Region Stuttgart] 2016). According to a current survey of workers carried out for the Federal Ministry of Labour and Social Affairs, long-term accounts are now offered to four in ten workers. However, one in ten of those surveyed does not know whether an account of this kind is available to him or her, which points to an information deficit (Himmelbach et al. 2016). A representative TNS survey of organisations conducted in 2010 that long-term accounts are used in just two per cent of organisations in Germany (Riedermann et al. 2011). Only just under a third of German companies with more than 50 employees offer homeworking options; see Federal Ministry of Labour and Social Affairs (BMAS) 2012b.

89 For 2015, the Institute for Employment Research found that there were 940 million hours of unpaid overtime and 764 million hours of paid overtime. This means that every employee worked on average 19.7 paid and 24.3 unpaid hours of overtime during the year; Institute for Employment Research (IAB) 2016a. The Federal Statistical Office reports lower figures on the basis of the Microcensus. As the question on overtime in the Microcensus is optional, it is likely to under-report the true figures.

90 According to a current survey of workers carried out for the Federal Ministry of Labour and Social Affairs (BMAS) 2016a. The Federal Statistical Office concludes that fulfilling all wishes regarding working time would increase the total volume of working time. In total, the unexploited working potential in 2014 was equivalent to more than half a million full-time positions; see Renger 2016.

91 The vast majority (89 per cent) of respondents who expressed a desire to change the scheduling of their working time also want to change the number of hours, although in most cases what is desired is a reduction in the number of hours worked in practice. If one looks at all respondents, a third would like to change both the scheduling and length of their working time, whereas merely around four per cent want to change the scheduling alone; Himmelbach et al. 2016.

92 Brenke 2016.

93 Federal Ministry of Labour and Social Affairs (BMAS) 2015b.
Challenges and tensions

The trend towards flexibility in working time and location, which is being reinforced by digitalisation, offers opportunities for greater self-determination in relation to work, new solutions for work-life balance, and a shift away from the “presence culture”. Alongside these positive aspects, however, it is also becoming evident that working from home, trust-based working time and an expectation for workers to be reachable at all times, are causing a “breakdown of the boundaries” of work. The lines between people’s working and personal lives, between work and leisure, between workplace and home become blurred. This can cause stress and poses new challenges in terms of health and safety at work.

Likewise, the use of flexibility options can lead not just to changes and improvements in how people work, but also to an increase or intensification in their work. It is also becoming evident that women and men use self-managed working time differently, which can lead to an entrenchment of traditional roles. With regard to work location and the equipment available for mobile working, the question is how, for example, comparable standards of ergonomic protection can be ensured as for workplaces at the traditional place of work. The way in which working time is organised cannot be separated from pay and the organisation’s “performance policy”. It must also be linked to a good corporate culture, responsible management and reasonable staffing estimates. The following challenges must be taken into account by employers and works councils, the social partners and legislators, in this context:

Firstly, the flexibility needs of companies and workers are not identical. Thus, a suitable balance must be struck. For companies, factors which play a major role – alongside employee satisfaction and positioning themselves as attractive employers – include labour and cost efficiency, the coordination effort required, quality of service, and staff availability. For workers, important advantages include greater time sovereignty, the ability to better balance work and family life, and a more flexible and partnership-based approach to sharing family commitments. A better work-life balance can also have a positive impact on health.

Alongside protection for workers, greater flexibility also plays a vital role in balancing different needs. The Working Time Report Germany 2016 shows that, overall, more than one in seven employees experience frequent changes to their working time due to operational requirements, while around one in four experience such changes occasionally, and that these flexibility requirements have a negative impact on workers’ health and job satisfaction. More than one in five respondents work in an environment where they are expected to be reachable at all times. Rising expectations on the part of employers and customers regarding workers’ availability can place particular pressure on those who have to combine their employment with care work. According to the Working Time Report, it is not just those in senior positions who are expected to be reachable during their leisure time. Often it is workers in lower occupations (especially in the service sector) who are expected to be reachable outside working hours and are frequently contacted. This breakdown of boundaries can result in work-related strain – which can have many causes – carrying over into leisure time, making it harder for users of flexible work arrangements to rest and recover.

96 The question of whether “breakdown of boundaries” is an appropriate term or too judgmental is contentious. As the term is widely used in the discussion in the social sciences, it is also used in this publication; see, for example, Gottschall/Voß 2003, for criticism of the term, see Mayer-Ahuja/Wolf 2005.
97 For example, those who work entirely or partly from home do more overtime than workers who do not work from home; see Federal Ministry of Labour and Social Affairs (BMAS) 2015b.
98 See, for example, Lott/Chung 2016.
Secondly, there are often widely varying expectations and needs within a workforce regarding the organisation of working time and location. On the one hand, there are groups of workers who see greater flexibility as an opportunity for greater self-determination in their work and would therefore like more individual options. On the other hand, there are also many workers who want clearly defined and reliable working hours and who do not want to take their work home with them. In addition, there are groups of workers for whom flexibility options are either not feasible or very limited.

Thirdly, this can result in polarisation between groups of workers, even beyond the boundaries of an individual organisation, because the extent to which the conditions are in place for flexibility in working time and location varies for different sectors, fields of activity and groups of workers. While in-demand skilled workers are in a position to enforce their preference for control over their working time and location, many other workers or contractors work on-call, or are on fixed-term contracts to cover temporary gaps, or work in sectors where their options are actually declining in the “round-the-clock economy”.

Fourthly, tensions can emerge between individual preferences and collective regulations. A high level of identification with their work, a strong performance culture in an organisation or career ambitions can, for example, lead workers to regard the statutory breaks and rest periods established for their protection as a form of paternalism, and to choose to ignore them.

Fifthly, greater flexibility can, for many, also lead to marginalisation, for example if technical aids are not fully accessible for people with disabilities. Accessibility is therefore an important issue. Otherwise there would be a danger of digitalisation raising new obstacles for people with disabilities.

And finally, operational needs can clash with societal preferences for fixed windows of shared free time which support a lively community and civic engagement. The more mobile and flexible the world of work becomes, the more important collective agreements and work agreements become, together with a complementary statutory framework which continues to protect windows of shared free time (especially Sundays and public holidays), as well as a corporate culture which enables people to “switch off” and go offline.

Policy-makers can support small and medium-sized enterprises (SMEs), in particular, in developing appropriate solutions in this context. Large companies have experience and implementation-related knowledge which can serve as a reference and a starting point, but often this cannot be directly applied. SMEs have the advantage that they can more easily offer individual solutions for individual workers. In some cases, however, they first need to obtain information and concrete implementation-related knowledge. In addition, smaller businesses often lack adequate resources in their personnel departments to implement changes.

In view of the challenges and tensions set out above, employers, works councils, the social partners and the state should contribute to solutions which ensure a fair balance of interests. In this context, new technical possibilities must be used to facilitate an organisation of working time which takes into account both workers’ changed needs and businesses’ rising flexibility requirements. In this way, flexibility compromises can be negotiated on the basis of a culture which promotes agreements.

In addition, the interests of SMEs must not be overlooked in the discussion about flexibility in working time and location. In staffing, financial, technical and organisational terms, they can quickly reach their limits when it comes to implementing such models. The question is thus how SMEs can be supported appropriately.

In view of the challenges and tensions set out above, employers, works councils, the social partners and the state should contribute to solutions which ensure a fair balance of interests. In this context, new technical possibilities must be used to facilitate an organisation of working time which takes into account both workers’ changed needs and businesses’ rising flexibility requirements. In this way, flexibility compromises can be negotiated on the basis of a culture which promotes agreements.

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2.6 COMPANIES: ORGANISATIONAL STRUCTURES IN TRANSFORMATION

Very often, it is not up to employers whether they want to go along with these developments or not. Firstly, companies are coming under pressure from competitors which are already embracing the digital trend and thus can work more quickly and cheaply; secondly, customers also have clear expectations of companies regarding rapid and efficient processes. Bavarian Industry Association (VBiW)

Employees collaborate worldwide, but at the same time are increasingly competing with each other for work. Digital connectivity and cloud infrastructures mean that work and services no longer have to be performed at the company’s facilities. This is resulting in a high level of flexibility regarding where and when work is performed. This is perhaps the most important change in the world of work at present. Hans Böckler Foundation

The previous sections have described the various processes which, as part of the digital transformation, are changing the conditions for business and work. Technological change, internationalisation, accelerated innovation and product cycles, innovative services based on Big Data®, and a new way of involving customers and dealing with customer wishes are shaking up value creation processes and posing entirely new requirements for the flexible organisation of how people work – both with each other and with software and/or machines. Companies and organisations are the place where all of these changes come together and where their effects on industrial relations are felt. Bavarian Industry Association (VBiW)

The “traditional” organisational principle, that of large, vertically integrated, hierarchically organised companies which manufacture standard products in large quantities, organise manufacturing steps internally where possible, and secure a supply of skilled labour primarily through the long-term retention and internal upskilling of their own staff, has long since ceased to be as popular as it was in the heyday of the industrial era. Nonetheless, no one single new paradigm can be identified as having replaced it.

Over time, changes to a company’s organisation have been accompanied and driven forward by diverse management models such as “lean production” or “lean management”, sociological analyses of the “end of the division of labour”, but also by major changes in corporate governance – not least the trend towards financial investors having greater influence on corporate decisions. Regarding all of the above, it must be kept in mind that a company’s organisation must always – like workers’ opportunities for influence and participation – vary depending on the type of enterprise, the sector, and the size of the organisation. Hans Böckler Foundation

BUSINESS CHARACTERISTICS IN FIGURES

The most recent figures from the Federal Statistical Office’s Business Register show that Germany has around 3.63 million businesses. Almost 2.3 million are sole traders, more than 450,000 have the legal form of a partnership (e.g. OHG, KG), around 666,000 are corporations (e.g. GmbH, AG), while the rest have other legal forms.

99 per cent of businesses are small and medium-sized enterprises (SMEs): they provide 60 per cent of all jobs. In turn, the vast majority of these businesses are micro-enterprises (80 per cent of all businesses, 18 per cent of all workers); small enterprises make up 15 per cent of all businesses and 22 per cent of all workers, and medium-sized enterprises make up almost three per cent of all businesses and 19 per cent of all workers. Large enterprises account for just 0.7 per cent of all businesses, but provide 40 per cent of all jobs.

In 2015, employees had co-determination at the workplace level under the Works Constitution Act (Betriebsverfassungsgesetz) in almost every tenth organisation in Germany with at least five workers. The larger the organisation, the more common it is for there to be a works council or staff council: the proportion is just five per cent for organisations with five to 50 workers, while 88 per cent of organisations with more than 500 workers have a staff representation body. In total, 42 per cent of workers in organisations with five or more workers have a works council. This share has declined by around ten percentage points since the start of the 1990s, which is primarily due to reductions in the category of organisations with 51 to 500 workers.

If the organisation of working conditions via a collective agreement (sectoral or company-level agreement) negotiated between employer representatives and trade unions is also taken into consideration, the proportion of workers who are covered rises. However, 36 per cent of private-sector workers in western Germany and 49 per cent in eastern Germany are not covered by a collective agreement or represented by a works council.

102 Federal Statistical Office figures for 2013. The Federal Statistical Office makes the following distinctions: micro-enterprises: up to 9 workers and up to 2 million euros in annual turnover; small enterprises: up to 49 workers and up to 10 million euros in annual turnover; medium-sized enterprises: up to 249 workers and up to 50 million euros in annual turnover; large enterprises: up to 249 workers or over 50 million euros in annual turnover

103 Wendolf 2005, Nölke 2014

104 Ellgoth/Kohaut 2016
There is also a downward trend in co-determination by workers under the laws on parity co-determination or one-third employee representation on supervisory boards. An analysis by the Hans Böckler Foundation found that 635 companies were covered by the 1976 Co-determination Act (Mitbestimmungsgesetz) in 2015, more than 100 fewer than the peak reached in the mid-2000s. It is estimated that around a further 1500 companies currently have corporate co-determination in accordance with the Act on One-Third Employee Representation in the Supervisory Board (Drittelbeteiligungsgesetz).

At present, it is still unclear to what extent the digital transformation will continue to displace the integrated company and the workplace as the physical location for value creation, and to reinforce the trend towards networked companies, which make the most of the possibilities of digitally and internationally connected, customer-focused value creation to provide “smart” or customised products and services with lower transaction costs. In sectors which mainly produce digitisable goods and services – such as the media and publishing sector and the music industry – the transformation which has already taken place since the end of the 1990s shows the fundamental transformative potential of digitalisation.

No single paradigm exists in the digital economy either, even if many business models aim to achieve a dominant market position. While some platforms concentrate on their core business as an intermediary for services and seek to remain as lean as possible in organisational terms, companies such as Amazon are systematically expanding their value chain towards content production and last mile logistics. In other words, digitalisation does not necessarily result in radical new forms of organisation for companies in all cases. Yet it offers the potential to take familiar trends to a new level, especially in the service sector.

The question is whether there will still be such a thing as a “standard company” in future, and what this means for the standard employment relationship. Will we have more virtual companies with a small core and a flexible periphery? Taking the model of the traditional company and the standard employment relationship as a starting point, three axes of change can be identified in how companies and work are organised. The types of change along the “greater external flexibility” axis are well known. Outsourcing, in the sense of transferring work which was previously carried out internally to sub-contractors located within the country or abroad (offshoring), was a key element of the rationalisation which took place during the structural changes of the 1990s, in particular; it applied to simple, discrete work transformed into “greater /flexibility and leadership must respond to this, if they want to succeed in the market. Customers’ preferences will continue to change as a result of digitalisation. They are developing more individualised wishes regarding products and greater expectations regarding the service provided by companies. Companies – and thus their workers – must respond to this, if they want to succeed in the market.

The biggest opportunities in connection with the digitalisation of value chains can be found in the improvement of the flexibility and efficiency of production processes and a more direct focus on the customer via customised products and services. The changes in the world of work, especially with regard to skills development, greater flexibility and leadership philosophy, are an important aspect of digitalisation.

Collective agreement and works council (WC) coverage, 2015*, in per cent

| Percentage of workers | Western Germany | East German Germany
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Private sector</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>WC and sectoral agreement</td>
<td>47%</td>
<td>20%</td>
</tr>
<tr>
<td>WC and company agreement</td>
<td>40%</td>
<td>19%</td>
</tr>
<tr>
<td>WC and no agreement</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>Sectoral agreement, no WC</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>Company agreement, no WC</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>No agreement and no WC</td>
<td>14%</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Workers in companies with a sectoral agreement | 47% | 16% | 17% | 46%
Workers in companies with a works council | 12% | 6%  | 7%  | 15%

*Basic: private-sector companies with 5 or more workers, excluding agriculture and not-for-profit organisations.

Source: Elgath/Robust 2016

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--- > The biggest opportunities in connection with the digitalisation of value chains can be found in the improvement of the flexibility and efficiency of production processes and a more direct focus on the customer via customised products and services. The changes in the world of work, especially with regard to skills development, greater flexibility and leadership philosophy, are an important aspect of digitalisation. <<

--- > Customers’ preferences will continue to change as a result of digitalisation. They are developing more individualised wishes regarding products and greater expectations regarding the service provided by companies. Companies – and thus their workers – must respond to this, if they want to succeed in the market. <<

--- > Over 70% of employment is now in the service sector. The focus must be on growing, forward-looking sectors and, accordingly, it is important not to develop the strategies for “Work 4.0” by taking industry as the starting point. To achieve “good work” for as many workers as possible amidst the digital revolution, the transformation processes in the social service sectors, in particular, must be placed centre stage. <<

United Services Trade Union (ver.di)

--- > Bayer 2016.


Digital business models, platforms and services are creating new forms of work, such as crowdworking. They are characterised by highly flexible working which can be individually determined. The discussion about Work 4.0 should not aim to define a new standard employment relationship. What was defined as standard in the mid-1980s is no longer standard today and will be even less so for future generations.

Flexible ways of organising companies and work

--- » The decision on whether value creation takes place in-house or wholly or partially using contracts for work and services is part of the free business decision to "make or buy". Genuine contracts for work and services must not be discredited by isolated cases where they have been misused.

--- » One fairly new phenomenon is external crowdsourcing, with work being outsourced digitally to the crowd. Crowdworking occupies an extreme position in the options of "make, buy or cooperate" (→ Chapter 2.2). It is not clear at present how relevant this approach, with labour being purchased on a situational and potentially completely anonymous basis, will become in the coming years.

In many sectors, including traditional industrial sectors, crowdsourcing is likely to play a minor role for the foreseeable future. However, it has long been clear that digitalisation and the reconfiguration of value chains has facilitated are also allowing new virtual organisational forms which stop short of the crowd variants, and this will continue to trans-
The spatial decentralisation axis also features familiar elements which are being boosted by the possibility of digital and virtual collaboration. The earliest legal provisions on homeworking by wage and salary employees are over a century old. What is new are the increasingly diverse possibilities for incorporating employees working outside the workplace into workflows. This includes better-connected home and mobile workstations, and virtual collaboration within the company using technical and software solutions. Internal crowds within a company, which allow interdepartmental and cross-site teams to be formed to handle projects before disbanding again, are one possible example of this, and they can in turn be combined with flexible integration of external workers.

The opportunities of locational flexibility are as obvious as the potential pitfalls: greater self-determination, new possibilities of combining work and personal commitments and a better work-life balance are realistic hopes for the working world of the future. At the same time, it is becoming increasingly clear that we must first learn how to navigate the introduction of greater flexibility. Often there are no clear rules. Not least for this reason, people often find the increased blurring of work-life boundaries stressful. With regard to collective staff representation, it is also important to keep an eye on the risk of workforce fragmentation. This specifically applies to potential shifts in the ratio of the core workforce to self-employed workers on an organisation’s periphery, which could have an impact on institutional co-determination. But even setting the issue of the relevant thresholds aside, the fundamental question is how the process of identifying and representing collective interests will be affected as industrial relations become increasingly virtual.

Even if the “virtual-only” company will not be a widespread economic reality for the foreseeable future, it is nonetheless clear that greater flexibility is being introduced along the three axes set out above and that new forms and combinations are emerging in this context.

Regarding all of the issues outlined above, nothing is inevitable; there are always options in relation to a company’s organisation. External flexibility must be possible in dynamic markets. However, certain limits should be imposed – including via legislation – on the systematic transfer of business risks to temporary agency workers or crowdworkers. Co-determination in the workplace, supplemented by participatory approaches, is a major opportunity to draw on workers’ skills in order to reshape the way in which companies and work are organised, so that they are fit for the future. The same applies to flexibility in working time and location, which functions more effectively if innovative approaches to organising work are negotiated between the company and the workforce or its representatives, as well as within the workforce. All of this requires a modern leadership culture, an effective occupational health system, and smart human resources management.  

The opportunities and risks of a digital transformation are not diametrically opposed, instead, the opportunities can only be unlocked by allaying workers’ concerns and reservations. Potential obstacles must therefore be addressed in order to tap into digitalisation’s potential for sustainable economic and social innovation. This can best be achieved if workers are involved and can better participate in shaping their working conditions.

Von menschlichen Interessenausstattung (IÖW) 2014.

Challenges

It is already foreseeable today that skills like creativity, network thinking and disruptive thinking (will) play a crucial role. <<

Alliance of German Employers’ Associations in the Metal and Electrical Engineering Industries

Visions of global collaboration in virtual teams across company boundaries raise questions about integration, leadership and oversight, as well as requiring adjustments in skills, working time and location. Collaboration between in-house and external staff in mixed teams and the integration of highly skilled service providers for specific tasks are already a reality today. <<

Gesamtmetall - Federation of German Employers’ Associations in the Metal and Electrical Engineering Industries

We need a frank discussion, right across the economy and public administration, about how good leadership can and should use existing resources and unlock people’s potential! <<

22 Apr. 2015 via arbeitenviernull.de

Truly agile companies are agile and stable at the same time. <<

17 Mar. 2016 via Twitter

New Quality of Work Initiative (INQA) 2014.

#arbeiten40
#arbeitenviernull

110 Wehling 2000; Berner 2014.

111 New Quality of Work Initiative (INQA) 2014.
A VISION FOR QUALITY JOBS IN THE DIGITAL AGE
3. A VISION FOR QUALITY JOBS IN THE DIGITAL AGE

The trends and challenges set out in Chapters 1 and 2 illustrate the forces affecting our world of work. While they are certainly transformative, they by no means predetermine the direction in which we are heading. As a society our aim should be to combine the huge economic potential of this transformation with social innovation. We are facing the task to make the most of the opportunities Work 4.0 offers: both in terms of value creation and productivity; but also in terms of skills-acquisition and individual self-determination. In order to succeed, we need to be a learning society open to innovation. And we must define clearly our goals when it comes to achieving quality jobs.

The vision outlined in this chapter builds on the strengths of the German economic and social model, which is characterised by a strong Small and Medium-Sized Enterprise (SME) sector, diversified, high-quality production, innovative industry, and a strong export orientation. It is important to use this comparative advantage, in order to stay internationally competitive in the long term while maintaining high environmental and social standards and taking incremental steps towards further innovation. Such a strategy allows us to maintain high wage levels and depends crucially on a highly skilled labour force.

In our view, promoting quality jobs is contingent on balancing security and flexibility in the future world of work. Flexibility without security, on the one hand, would result in people being unwilling to commit to sometimes difficult new learning processes. Security without flexibility, on the other hand, would stifle creativity and innovation. We therefore need both: security and flexibility. The state has an important role to play in driving innovation and promoting technology, but it also serves to provide security during periods of transformation by actively supporting high quality, innovation-rich working conditions. Inclusive political and economic institutions, a long-established system of social partner-ship, and the resulting ability to reach compromises – these are central prerequisites for success in the current transformation process. They provide the framework for negotiated flexibility in the social market economy.

The coalition agreement of the current governing coalition at federal level devotes an entire subchapter to the goal of “good work” and underlines that “full employment with good and productive jobs” is of strategic importance for “sustainable progress”. The OECD uses the term “job quality” and looks at three key issues in this context: earnings, labour market security and the quality of the working environment. The concept of “decent work” as used by the International Labour Organization (ILO) is defined much more broadly; it has been incorporated into many UN human rights declarations, reports and resolutions, including the 2030 Agenda for Sustainable Development.

Over the course of the Work 4.0 dialogue, five areas have emerged which we view as essential components of a vision for quality jobs in the digital era.

INCOME AND SOCIAL SECURITY
Social protection and an income based on merit and ability are fundamental prerequisites for ensuring that every individual can live from his or her work and can rely on a social safety net even in hard times. It is important that the potential productivity gains of digitalisation also lead to wage increases in all sectors. Collective agreements are an important instrument in this context. The principle of fair remuneration for performance must be reflected in reliable pay and an end to the gender pay gap. Collective agreements play a crucial role here, as does the early provision of vocational guidance and counselling in ensuring a stable employment history for the individual. In a work-oriented society, good social protection systems are particularly necessary when people are not in work or are no longer able to work. Providing social protection against the major risks in life, such as old age, illness, accidents and unemployment, will remain a core function of the welfare state. Where people wish to be self-employed, they should be supported and offered better social safeguards than are currently provided.

References:
113 Stiglitz/Greenwald 2014.
114 Mazzucato 2014.
ACCESS TO QUALITY JOBS

Every individual should have the opportunity to access quality jobs, i.e. secure work offering the possibility of professional advancement. At all times, our aim should be full employment through high-quality jobs. People who are not equipped to perform skilled labour need support and new opportunities. Jobs that offer little in the way of a reliable income or secure prospects will continue to exist in the future. However, they should not dominate the entire course of a person’s working life. And securing employability via skills development will become increasingly important, even for workers with skilled vocational qualifications.

VARIETY AS THE NEW NORMAL: A LIFE-PHASE APPROACH RATHER THAN RIGID MODELS OF WORK

These “conventional” needs are being joined by new ones: people’s preferences and requirements regarding work change over the course of their lives. In many respects, the idea of one standard employment relationship for all no longer reflects today’s realities. “Standard” or “normal” employment relationships are in fact becoming less the norm. Rather, variety is the new normal, as people move, for example, between full-time and part-time work; between employment and career breaks for family reasons, but also between employment and self-employment. It is questionable whether standard employment relationships should be starkly contrasted with “non-standard employment”, especially in the case of part-time work (→ Chapter 4.2 and Chapter 5). The social partners and policy-makers face the task of recognising diverse preferences regarding work and thus giving people greater self-determination over the life course. It is important to provide social protection at times when people are in transition between different gainful activities or between periods of work and career breaks for family reasons.

RETAINING THE QUALITY OF WORK

With regard to the quality of work within the digital transformation, the four key aspects are: dealing with greater flexibility, a changing interaction between humans and machines, new forms of organising labour, and the role of Big Data in the production process. They all carry the potential for making work better, but they can also be a new source of strain. We must find ways to support new production processes and business models and to combine them with a modern system of Occupational Safety and Health 4.0 (→ Chapter 4.4).

CONSIDERING CO-DETERMINATION, PARTICIPATION AND CORPORATE CULTURE AS A WHOLE

Many of these aims require an adequate regulatory framework; the specifics, however, can best be negotiated and designed by social partners and at the workplace level. Representative structures will continue to be necessary, but there is also a growing desire for individual participation in organisations. Institutional co-determination, worker participation and a good corporate and management culture are therefore no contradictions, but complementary. Together, they are the prerequisites for innovative and democratic companies within an innovative and democratic society.
POLICY OPTIONS

4

4.1 EMPLOYABILITY: FROM UNEMPLOYMENT INSURANCE TO EMPLOYMENT INSURANCE
4.2 WORKING TIME: FLEXIBLE, BUT SELF-DETERMINED
4.3 THE SERVICE SECTOR: FOSTERING GOOD WORKING CONDITIONS
4.4 HEALTHY WORK: APPROACHES FOR OCCUPATIONAL SAFETY AND HEALTH 4.0
4.5 EMPLOYEE DATA PROTECTION: SAFEGUARDING HIGH STANDARDS
4.6 CO-DETERMINATION AND PARTICIPATION: SHAPING THE TRANSFORMATION IN PARTNERSHIP
4.7 SELF-EMPLOYMENT: FOSTERING FREEDOM AND SOCIAL PROTECTION
4.8 THE WELFARE STATE: FUTURE PROSPECTS AND EUROPEAN DIALOGUE
4. POLICY OPTIONS

The following sections draw conclusions and identify policy options for the main areas discussed within the Work 4.0 dialogue. Each subchapter reviews the most important questions from the consultation process, sets out points on which a consensus exists as well as the dividing lines, and summarises the most important outcomes of the discussions. Some subchapters build on analyses from the first two chapters. Others offer additional findings before drawing conclusions in the relevant field of action.

The range of policy options stretches from short-term measures, some of which have already been undertaken or are planned for the current electoral term, to medium-term measures proposed for the next legislative period, to prospective projects for the long term. Where findings have led the Federal Ministry of Labour and Social Affairs to conclude that no action is needed at present, these results are also presented. Finally, there are a range of areas where further examination and studies are needed.

The first subchapter sets out how a high level of employment and employability can be ensured in the World of Work 4.0 (→ Chapter 4.1). To secure this even amidst the digital transformation, major efforts will be needed in relation to skills development and continuing vocational education and training. Questions relating to the organisation of work, and in particular the organisation of working time (→ Chapter 4.2), have been an important priority in the consultation process. Here, it is important to reconcile companies’ flexibility requirements with workers’ preferences. Most of the topics examined in Chapter 4 apply to all sectors, but at the same time there are special issues concerning work in new service markets (→ Chapter 4.3). Attention must be paid to safeguarding conditions for decent and healthy work (→ Chapter 4.4). The same applies to the right to informational privacy that needs to remain guaranteed in a digitalised economy and for which employee data protection must also find answers (→ Chapter 4.5). Wherever workers’ co-determination and participation is ensured on an equal footing, solutions at the company-level can be used to tailor statutory requirements (→ Chapter 4.6). However, the future world of work will be shaped not just by employees but also by self-employed individuals, whose number may rise in the future as a result of the digital transformation. There are key issues affecting this group of workers that urgently need addressing; ranging from a good income and social protection to co-determination and participation issues (→ Chapter 4.7). Chapter 4 concludes by looking ahead to the future of the German welfare state and social security systems (→ Chapter 4.8), which will also face challenges in light of the transformations in the world of work.
Although forecasts concerned with digitalisation’s impacts on the labour market come to varying conclusions, they all agree that the pace of change in the coming decades will be rapid. As occupations and sectors are transformed, attention needs to be focused more on the subject of maintaining individual employability amidst this transformation. Full employment in decent jobs for all remains our goal.

For most workers, decent work primarily means a secure, permanent job and an adequate income which they can live on. The Work 4.0 dialogue mainly concentrated on “new” areas where conflicting priorities are on display within the world of work outlined in Chapter 2. Nevertheless, several partners in the consultation process rightly warned that it is important not to lose sight of the “old” questions. The Federal Government has taken many steps in the current electoral term to safeguard and improve stability on the labour market – from the minimum wage, to action to prevent misuse of temporary agency work and contracts for work and services, to better integration of the long-term unemployed and of refugees into the labour market.

If we want to maintain a high level of employment in the face of digital structural change, the distribution of profits through gains in productivity will also be a central issue. Corporate profits – including those of large digital platforms – need to be subjected to taxation. Public goods and services and a modern infrastructure require sustainable financing over the long term. A high level of income creates demand for products and services in growing markets and safeguards employment in these areas. Consequently, the issues and aims in the field of labour and social policy raised in this White Paper cannot be regarded in isolation. They must be dovetailed with an employment-focused economic policy. For in times of sweeping structural change, a wide range of instruments are needed in order to achieve the aim of full employment (→ Chapter 2.1). An enabling macroeconomic framework, industrial and services policies, and the funding of research and innovation are all key elements in the state’s role of helping shape structural changes while providing a social safety net.

Labour market policy offers support for labour market integration. Yet it can and does do more. During the last decade’s global financial and economic crisis, for example, a forward-looking labour market policy played a significant part in preventing massive job losses in Germany. This allowed the German economy to weather the crisis better than many other countries.

Labour market policy also has a key role to play in shaping structural change. This too is evident from a look at the past: As early as the mid 1960s, there was a broad public debate about implications of automation and on how to shape this development. It led to the 1969 Employment Promotion Act (Arbeitsförderungsgesetz), which laid the foundation for preventive labour market policy. Today, half a decade later, the digital transformation requires a new realignment of labour market policy aimed at preventing or reducing unemployment and securing a high level of labour market participation. Particularly in light of the fact that the potential labour force is expected to shrink as a result of demographic change, forward-looking steps must be taken to ensure that a gap does not open up between supply and demand in the labour market.
To date, the necessary regular monitoring of future demand for skilled labour is not yet in place. Such monitoring would provide a regularly updated forecast of trends in demographic, regional and skills-related mismatches, and thus also serve as the foundation for a realignment of labour market policy.

To secure the skilled labour base, it will remain necessary to make use not only of migration but also of existing potential, especially that offered by a further increase in women’s employment and the integration of low-skilled workers. However, it will be just as important, if not more so, to maintain and boost the employability of each individual. This makes a forward-looking and strategic skills policy the mainstay of employment and labour market policy in the digital transformation.

ISSUED RAISED IN THE CONSULTATION PROCESS

The responses to the Green Paper identify the securing of employment and incomes as core functions of future labour and economic policy. That said, they emphasise varying aspects: while municipalities, for example, call for creating or expanding publicly funded employment, employers put a stress on the need to adapt the skills mix to reflect changes in labour demand.

The Federal Employment Agency’s role and importance in relation to skills development is singled out in many responses to the Green Paper.

To a much greater degree. «

The Federal Employment Agency

We want to see the Federal Employment Agency’s existing activities in the field of continuing vocational education and training expanded to become a comprehensive system. This means that the employment agencies should offer continuing vocational training to workers in employment to a much greater degree. «

--- » SMEs in particular generally lack the resources for systematic, strategic, forward-looking human resources planning and development.

The Federal Employment Agency therefore intends to focus more on these companies, as they are in particularly urgent need of support. «

Federal Employment Agency

--- » It could also be helpful, however, to offer support structures which enable SMEs to pool continuing vocational education and training capabilities. Companies could form employers’ groups on a regional basis in order to offer their workers a wide range of continuing training options which they could not provide alone. Support from a potential skills agency could be helpful in this context. «

German Confederation of Small and Medium Sized Enterprises (BVMW)

--- » The Federal Employment Agency has made a comprehensive system. This is already active today in advising SMEs and workers about the labour market, skills development and continuing vocational training and upskilling. Both the SME sector and trade unions are calling for these activities to be developed further, especially as regards the pooling of continuing training capabilities, for example in the form of regional employers’ groups.

The Work 4.0 Working Group set up by the Conference of the Labour and Social Affairs Ministers of the Länder is also calling for an advisory service on continuing vocational education and training that should be freely accessible for all, and for greater public funding to be made available for quality assurance and the professionalisation of the staff involved.

There are also advocates of other forms of state support, such as a wage compensation benefit based on the Austrian model of part-time training leave. Tying in with steps being taken in collective agreements in the metal and electrical industries and the call for state action to create a framework for part-time training leave, the German Trade Union Confederation argues that the identification of skills needs and support for part-time skills development measures should be key elements in reforming the system for continuing vocational education and training and skills development.

--- » The key to shaping the digital transformation of work lies in our employees’ skills. The teaching of digital skills must begin in general-education and vocational schools, as well as higher education; occupational profiles must be adapted; and skills development modules with practical relevance must be designed to support lifelong learning. «

Daimler AG

--- » All levels of the state should develop and support further new possibilities for socially useful work, as a complement to gainful employment. This could make it possible to emphasise and consider work’s social and other aspects, beyond the narrow concept of gainful employment. «

Association of German Counties (DLT)

--- » The responses to the Green Paper identify the securing of employability of each individual. This makes a forward-looking and strategic skills policy the mainstay of employment and labour market policy in the digital transformation.

121 Federal Employment Agency (BA) 2015.
122 German Confederation of Small and Medium Sized Enterprises (BVMW) 2015.
123 Conference of the Labour and Social Affairs Ministers of the Länder (ASMK), Work 4.0 Working Group 2016.
124 United Services Trade Union (ver.di) 2015.
125 German Trade Union Confederation (DGB) 2015.
The function of labour market policy is to align three different sets of aims and interests. Workers want career prospects and a successful working life. Businesses need qualified skilled workers, in order to remain innovative and competitive amidst the digital transformation. Society has an interest in as many people as possible participating in the labour market. There is therefore a shared interest in greater investment in qualifications and skills.

Consequently, the Federal Ministry of Labour and Social Affairs intends to update the Federal Government’s Skilled Labour Concept, which was established in 2011, and link it with a skills strategy for the changing world of work. The most recent progress report on the Skilled Labour Concept shows that many targets have already been reached. At the same time, new challenges have emerged both on the supply side, in connection with the integration of refugees into the labour market, and on the demand side, especially as a result of digital structural change.

To reduce the uncertainties outlined above regarding future demand for skilled labour and for skills, the Federal Ministry of Labour and Social Affairs will introduce a new monitoring of future skilled-labour needs. The analytical results could be discussed by the Federal Government and the social partners, for example within the framework of the Partnership for Skilled Professionals. They could also feed into the work of the relevant regional labour market stakeholders securing the supply of skilled labour and the Innovation Office for Skilled Labour for the Regions, which is supported by the Federal Ministry of Labour and Social Affairs.

Based on reliable skilled labour demand and supply forecasts, labour market stakeholders from the political, economic and social spheres can take a more targeted look at workers’ initial and continuing training, as Germany’s future as a location for business depends to a crucial extent on its workers being well-educated and skilled.

Basic skills are needed in almost all jobs in Germany. Imparting these essential skills is a task for the education and vocational training system, which will therefore focus more on digital skills in the future. Lifelong vocational learning will also play a much more important role in future. The digital transformation is changing the mix of tasks within existing occupational profiles and leading to a more complex blend of required skills, which will make additional digital qualifications compulsory in almost all sectors and occupations. Social, communicative and intercultural skills, systemic and creative thinking, the capacity for abstract thinking, and rapid information processing and data selection capabilities are vital for success in the labour market.

Digital literacy, the ability to confidently deal with online sources and more generally with new, mobile computer and online media (devices, Web 2.0 applications), is becoming a basic requirement. In the most recent OECD’s PIAAC survey, just eight per cent of respondents stated that they never use a computer in their work. Basic digital skills, then, are already necessary in order to meet professional requirements in almost all jobs in Germany even today.

A high skills level and continuing development of competencies is in the interest of both employers and workers. Skills development helps to secure and boost companies’ competitiveness and maintain workers’ employability. In this context, the principle should be that the costs are shared fairly between employers and workers, taking into consideration the operational and individual benefits.

--- » SHAPING THE WAY AHEAD

--- » One particular priority must be teaching IT skills across the board. In this context, skills development is needed at all levels of the education system. STEM skills (science, technology, engineering and mathematics) must be taught and developed more intensively and holistically, starting in schools. The same applies to higher education.

--- » A high skills level and continuing development of competencies is in the interest of both employers and workers. Skills development helps to secure and boost companies’ competitiveness and maintain workers’ employability. In this context, the principle should be that the costs are shared fairly between employers and workers, taking into consideration the operational and individual benefits.

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--- » Based on reliable skilled labour demand and supply forecasts, labour market stakeholders from the political, economic and social spheres can take a more targeted look at workers’ initial and continuing training, as Germany’s future as a location for business depends to a crucial extent on its workers being well-educated and skilled.
The transformation of the world of work and, more generally, the world we live in is shaping professional biographies on all skills levels: they are becoming more dynamic, varied and individual. Thus, in order to avoid obstacles in people’s working and personal lives, workers must be given active support in their change and adaptation processes. The main challenge for labour policy is to manage transitions between main stages of working life, to actively support individuals as they start, change and advance in their careers, and to prevent backward steps.

We need a comprehensive strategy for long-term skills development and continuing vocational training. The implementation of this strategy should be discussed at a “National Conference on Continuing Vocational Training”, with the involvement of all relevant ministries of the Federal Government, the Länder, the social partners and other stakeholders. The aim should be to expand, bring together and integrate all strands of continuing vocational education and training at federal and Länder level, in order to establish a consistent overarching strategy.

Already today, the Federal Government is using various instruments to support continuing vocational education and training and skills development measures for workers and unemployed persons. Most of the training for workers is carried out by the employment agencies and job centres in line with the regulations on employment promotion and basic income support. A second key pillar is implemented through the Upgrading Training Assistance Act (Aufstiegsfortbildungsförderungsgesetz), in the form of financial assistance for master craftsmen trainees (Meister-BAföG), for which the Länder are responsible. Gaps between these two channels for support must be closed, bearing in mind companies’ and employers’ responsibilities, especially as regards preventive continuing training for their workers “below” the level of career advancement schemes.

Furthermore, it is important to keep two different perspectives in mind, which in some respects conflict with each other. From an organisation’s perspective, continuing vocational education and training primarily serves to develop, apply and update the skills required within the organisation, to retain skilled workers, and to provide impetus for innovation, productivity gains, as well as human resource and organisational development. From the perspective of an individual’s life course, continuing vocational education and training can serve to maintain and improve his or her individual employability in a highly dynamic world of work with non-linear work histories, make it possible for him or her to change employers and sectors, and facilitate transitions between permanent positions, self-employment and family-related career breaks.

Besides these two perspectives, the public interest must also be kept in mind. Continuing vocational education and training is in the overall economic interest, as better education leading to a higher growth potential means that revenues from contributions and taxes can be expected to increase. The 2016 OECD report “Skills Matter”, which is based on PIAAC data, shows that, going beyond productivity gains of this kind, there is also a correlation between skills and desirable non-economic factors, such as trust, political participation, and health. The report concludes that investment in basic skills provides positive economic and social returns for both individuals and society as a whole.

However, if the transformation is to receive this kind of active support from economic and labour market policy, a broad financing base is required for the necessary campaign to promote skills development and continuing vocational education and training. The costs relating to the provision of advice, continuing vocational education and training, release from work and wage replacement must therefore be shared fairly between the state, companies and individuals. In this context, it must be clarified what proportion should be financed via contributions and what proportion via taxation.

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128 Expanding skills, step by step, is a vital task in human resources development. Continuing training and individual participation will be key for individuals, while co-determination will be key for all workers. Association of Staff Councils of the Supreme Federal Authorities

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When it comes to flexibility in working life, Germany is a developing country. #arbeitenviernull 22 Apr. 2015 via Twitter
CHALLENGES FOR THE CONTINUING TRAINING SYSTEM

Action is needed at three levels to improve the continuing vocational education and training system.

Opportunities for access: in 2014, participation in continuing vocational education and training rose to above 50 per cent for the first time. Particular progress was made in the case of semi-skilled and unskilled workers (up 7 percentage points compared to 2012) and individuals with low levels of educational attainment (up 4 percentage points compared to 2012). Nonetheless, participation in continuing vocational education and training remains socially selective in Germany. There are relatively large disparities in the distribution of opportunities for access: people over the age of 50, low-skilled people, people with a migrant background, employees of small companies, and temporary agency workers take part in continuing training much more rarely than others. This consultation process indicated that special attention must be devoted to the fact that low-skilled workers in particular are often involved in highly concentrated work processes with fixed cycles, and this alone means they have little leeway to engage in continuing training in their day-to-day work.

Information and counselling: besides the advice provided by the Federal Employment Agency, many other institutions are active in this field, such as chambers or adult education centres. However, there is no nationwide network of independent, low-threshold counselling centres; nor are there binding quality standards for the provision of counsel. The degree of professionalisation among counsellors also varies widely.

Systematisation: the German continuing training landscape is extremely heterogeneous and is shaped by various stakeholders, institutions and educational traditions, which makes it tremendously difficult to coordinate the planning and implementation of continuing vocational education and training in tailored ways for specific target groups. Continuing training institutions primarily follow their own institutional mandate. This hinders cooperation between public, in-company and external continuing training institutions, all of which are committed to different educational traditions. It is also important to overcome disparities in how the different types of continuing vocational training (formal, non-formal and informal) are treated.

At the same time, digitalisation is also generating new or evolved formats for continuing training, such as blended learning. These new forms of learning allow greater flexibility in when and where continuing training takes place, and promote learning in the workplace. Computer-based training paves the way for workflow-integrated learning. This cuts costs and allows for immediate application of newly acquired capabilities. Digital assistance and tutoring systems go further and offer the worker individually tailored assistance and explanations within the production process. New continuing training formats and systems can help to impart content in appropriate ways for specific target groups and ages. Part-time employment must not implicate a lower level of participation in continuing vocational education and training.

FROM UNEMPLOYMENT TO EMPLOYMENT INSURANCE

The following paragraphs map out a new policy on continuing vocational education and training. The fundamental principle is for the current unemployment insurance to become more focused on prevention, with the ultimate aim of transforming it into an employment insurance that actively supports transitions within people’s working lives via periods of continuing vocational education and training. It is important to provide preventative protection against new employment risks, to systematically support professional development and advancement opportunities over people’s life course, and to boost “innovative hazard”. The aim is nothing less than a widening of the insurance concept, as in the modern world of work it will be more important than ever not to define risks as existing only at the moment when unemployment is imminent or already a reality. Instead, preventative action should be taken over the life course in order to safeguard and increase individual employability. This includes a higher degree of skills development for all workers – including preventative measures, and measures designed to support their career pathways – but especially for those who currently participate less in skills development.

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130 See Baethge et al. 2013.
131 Schmid 2012.
The process of further developing the unemployment insurance into an employment insurance should take place in several stages, with short-, medium- and long-term steps. Each stage will build on learning experiences acquired during the preceding stage, which must be systematically exploited.

Initial steps have already been taken during the current electoral term. The amendment of the Upgrading Training Assistance Act (Aufstiegsfortbildungsförderungsgesetz) strengthened the foundations for upward occupational mobility, and the Act to Boost Unemployment Insurance Cover and Continuing Training (Arbeitslosenversicherungsschutz- und Weiterbildungsstärkungsgesetz) set an initial course. The latter Act improves access for low-skilled workers and the long-term unemployed to continuing vocational education and training that leads to a formal qualification. It also facilitates more opportunities for continuing vocational training for employees of small and medium-sized enterprises, i.e. those groups who tend to participate in continuing training more rarely. Bonuses for success provide targeted incentives and motivate people to stay the course over several years of continuing training until they successfully attain a vocational qualification. The Act is a response to results of the OECD’s PIAAC study, which found that low-skilled workers, long-term unemployed and older workers, in particular, have low levels of basic skills by international standards. The Act now enables support for basic skills to be provided where required, in order to empower adults without vocational qualifications to successfully undertake vocational training.

The next step should be to provide qualified counselling, including a comprehensive skills assessment, to introduce more needs-assessed support for continuing vocational training for workers, and to better integrate the various instruments. The Federal Employment Agency has wide-ranging experience with instruments used to analyse individuals’ potential and assess their skills, and is represented in every region of the country. It already holds the statutory task of offering advisory services to workers and employers. This includes both vocational guidance and labour-market advice for employers. Both of these services should be strengthened. The quality of advice offered should also be enhanced by properly taking into account the individual’s formal and informal skills, state of health and life circumstances, requirements of the labour market and the complex continuing training landscape.

In this context, the Federal Employment Agency recently completed a pilot project on continuing training counselling for workers and rates the project very positively. The levels of interest in and demand for professional advice on continuing training are extremely high, especially amongst those who are in work. They constituted the largest group of participants in the pilot project. Around 64 per cent of those who received counsel had an “interrupted” work history. These individuals in particular can derive long-term benefits from preventative counsel tailored to their phase in life. What is crucial is that the counselling has an impact, that it ignites people’s interest in continuing vocational training, so that new opportunities for employment, development and advancement can emerge.

In the medium-term, the plan is to review existing means of supporting continuing vocational training, including those aimed at improving digital skills, and to further develop existing programmes. It must also be examined whether new opportunities to undertake continuing vocational training while receiving the transfer short-time work allowance, which were introduced by the Act to Boost Unemployment Insurance Cover and Continuing Training, can be extended beyond low-skilled and older people to include other groups in the future. Specifically, a prospectivesystem for continuing vocational education and training should contain the following elements:

As part of the first stage, building on the experience acquired through the pilot project on continuing training advice, a high-quality, nationwide, lifelong counselling service run by the Federal Employment Agency should bring the preventative, life-phase approach in unemployment insurance to the fore and adapt the Federal Employment Agency’s objectives in light of the transformation of work. In this context, greater attention will need to be paid to the insured person’s medium- to long-term employment and income prospects. This underlines the fact that labour market policy is an investment. Early and continuous protection against income and employment risks in transitions between various forms of work and employment is a central pillar of a welfare state which takes a life-phase approach, and will act as a targeted supplement to the existing protection against income risks in the event of unemployment. In the medium-term, the Federal Employment Agency should consequently offer all interested individuals comprehensive vocational guidance, including a comprehensive skills assessment and...
life-phase counselling. The advisory services for employers (especially SMEs) could also undergo a targeted expansion in this context.

As the employment prospects of semi-skilled and unskilled workers will deteriorate further in the labour market of the future, better support options and incentives could conceivably help this target group to achieve a vocational qualification later in life, on top of the existing legal entitlement to acquire a lower secondary school certificate as adults. For low-skilled individuals for whom acquiring a vocational qualification is too great a hurdle, support could also be provided for skills development measures below the level of vocational qualifications or partial qualifications, irrespective of the size of the company. As an incentive for businesses to take action to improve their employees’ skills against the backdrop of the digital transformation, the possibility of partial funding from the Federal Employment Agency for appropriate continuing vocational training should be considered.

As technologies and associated fields of activity undergo significant changes, it is difficult even for workers with vocational qualifications to keep abreast of these changes without continuous training. This trend is what makes lifelong learning essential, and support for continuing vocational education and training imperative irrespective of age or the size of the company, especially if some time has passed since individuals originally acquired their vocational qualification and last received support for up-skilling activities.

The targeted acquisition of IT skills will become more and more important in a wide range of sectors. Broad cooperation with diverse providers will therefore be necessary in order to implement a nationwide pilot project for additional digital qualifications. There are already initial pilot projects to develop additional qualifications of this kind, for example within the Berlin Senate’s contribution to the Work 4.0 dialogue.134

The measures outlined above must be designed in such a way that they can be supplemented by collective agreements. Sector-wide funds could conceivably top up public funding, for example by compensating for loss of earnings.

In the process of implementing a comprehensive strategy for long-term skills development and continuing training, an interministerial approach incorporating the activities of the Länder will be pursued, and this should be negotiated in the framework of a “National Conference on Continuing Vocational Training”. This strategy should systematically pull together the different strands of support, from initial to continuing vocational training, to career advancement training. This process could conceivably culminate in a continuing vocational education and training system with the following elements:

Within employment promotion, entitlement to support for continuing vocational training for workers and unemployed persons and the services provided should vary according to the type of skills development – i.e. whether it is designed to maintain, develop or take skills to the next level. The financial support provided should cover, in each case, the costs of the skills development measure, and – provided that the insurance qualifying period has been completed – the cost of living and social security costs for the duration of the training. Funding should come from social insurance contributions, co-payments by companies and individuals, and taxation, depending on who the training’s main benefits accrue to. In addition, supplementary regulations on employees’ release from work for the duration of the continuing training would be necessary, similar to those which already exist for parental leave.

The reforms proposed here would require initial means-testing to be carried out in the framework of the continuing training advice provided by the Federal Employment Agency. In the long term, a Personal Worker’s Account could also be created, with a tax-funded “initial capital” which workers could use for skills development and career breaks (→ Chapter 4.8).

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134 Berlin Senate Department for Labour, Integration and Women’s Issues (Senatsverwaltung für Arbeit, Integration und Frauen Berlin) 2016.
SUMMARY

- Germany’s future as an attractive location for business depends to a crucial extent on its workers being well-educated and skilled. In light of the digital transformation and demographic change, policy-makers must use a wide range of instruments to achieve the goal of full employment. An enabling macroeconomic framework, industrial and services policies, and the funding of research and innovation are all key elements in managing this structural change.

- Policy-makers must manage the necessary changes in the education system at all levels. Investment in education, continuing vocational education and training, and skills development boost economic competitiveness and innovation in an ageing society.

- The upheavals of the World of Work 4.0 make it necessary to invest at an early stage in strengthening skills maintenance and in enhancing advancement prospects over the whole course of people’s lives. The Federal Employment Agency has a substantial role to play in that regard. Support has to focus more on prevention, and must not come into play only once there is imminent risk of losing one’s job, or be limited to upgrading low skills.

- The Federal Ministry of Labour and Social Affairs is planning to gradually develop the current unemployment insurance into an employment insurance to enable more preventative support for workers. An important element is the right to independent vocational guidance and counselling on continuing vocational education and training. Looking to the future, one aspiration is the introduction of a legal right to continuing vocational education and training. A comprehensive strategy for continuing training should be discussed and developed at a “National Conference on Continuing Vocational Training”, with the involvement of all relevant ministries of the Federal Government, the Länder, the social partners and other stakeholders.

4.2 WORKING TIME: FLEXIBLE, BUT SELF-DETERMINED

Who sets the rhythm and pace when it comes to matters of working time in our future world of work? A wide range of different interests and needs are being voiced on this question as part of a lively, diverse debate (› Chapter 2.5): balancing companies’ and workers’ flexibility needs while at the same time maintaining health and safety at work; boosting individual time sovereignty; taking into consideration different expectations and needs within a workforce; and protecting windows of shared free time to support a lively community. The opportunities include more options for greater self-determination in the context of work and better approaches to balancing work and personal commitments. The critical issues range from growing flexibility requirements for companies, involuntary part-time work, the expectation for workers to be reachable at all times, unpaid overtime and unclaimed holiday entitlement to non-compliance with rest periods in a world where boundaries between work and leisure become increasingly blurred.

--- « I am in favour of the principle of flexibility in terms of working time and location, but I think that issues like overtime and weekend work must then be clearly regulated. »

10 Mar. 2016 via arbeitenviernull.de
ISSUES RAISED IN THE CONSULTATION PROCESS

The subject of flexibility around working time and location was examined in detail as part of the Work 4.0 dialogue and via the “Digital Working World” platform within the context of the Federal Government’s IT Summit process. In a separate dialogue forum on working time initiated by Federal Minister Andrea Nahles with the social partners, companies, civil society and academia, a broad consensus emerged that working time must be organised in a way which better takes into account particular and differing time needs over the course of people’s lives. The discussion covered both factors for success and obstacles to the implementation of flexible working models in the workplace. There was agreement that working time flexibility can only be successfully put in place if it is flanked by suitable communication, corporate and management cultures in companies. In this context, advisory services, networks, guidelines and the sharing of examples of good practice in organisations, and specifically SMEs, are helpful in terms of implementation.

The discussion also tackled the question of what new flexibility compromises struck by employers and trade unions could look like, and what contribution the state can provide in this process. Employers, by and large, put forward the view that legislation on working time should be relaxed with regard to provisions on maximum working time and rest periods, in order to better meet businesses’ needs. Trade unions raised the possibility of new legal rights for workers (the right not to be reachable, rights relating to the scheduling of working time, the right to home-office working) and drew attention to shortcomings in the monitoring of compliance with the Working Time Act (Arbeitszeitgesetz). An intensive debate also took place with respect to the option of expanding the leeway of social partners within the existing law, and, on this basis, setting up experimental spaces in businesses where new approaches agreed on by social partners can be tested and scientifically evaluated (Chapter 5).

Im sum, three key aims emerged from this section of the Work 4.0 dialogue. Workers must be protected from overwork and a breakdown of the boundaries between work and private life. Working times must be organised in such a way that workers’ health and safety are not jeopardised. More options offering working time choice should pave the way for greater control over working time and location. New incentives for flexibility arrangements negotiated by the social partners ought to facilitate new compromises on an innovative organisation of work and create more scope for arrangements at firm-level.

Many workers express a wish for more flexible working hours and the possibility of working from home so that they can better combine work and their personal life. It is also becoming clear, however, that trust-based working time, the growing expectation that workers should be reachable outside working hours, extra work and non-standard working hours can jeopardise the work-life balance. Work from home also contributes to blurring the line between working hours and leisure time. A breakdown of the boundaries separating work and private life can have a negative impact on health. At the same time, the existing legal framework already allows a large degree of flexibility while safeguarding a high level of health and safety at work.

LEGAL REGULATIONS ON THE ORGANISATION OF WORKING TIME

German legislation is bound by the provisions of the European Working Time Directive. The Directive stipulates that the average working time for each seven-day period, including overtime, may not exceed 48 hours. In addition, every worker is entitled to a minimum daily rest period of 11 consecutive hours per 24-hour period. The German Working Time Act (Arbeitszeitgesetz) aims, among other things, to ensure the health and safety of workers and to design the framework for flexible working time with this in mind. The Act is therefore based on the principle of an eight-hour day and six working days per week. Working time on a working day can be extended to up to ten hours without any special justification. There must be an offset, reducing the average working time to eight hours, within six calendar months or 24 weeks. Workers are entitled to an uninterrupted 11-hour rest period after the end of their daily working time. In principle, Sunday is the weekly rest day.

Beyond the Work 4.0 dialogue, the issue was discussed by a working group of the IT Summit’s “Digital Working World” platform, headed by the Federal Ministry of Labour and Social Affairs and the Metalworkers’ Union (IG Metall), with a focus on issues relating to the digital world of work. The working group’s recommendations have already been published; see Federal Ministry of Labour and Social Affairs (BMAS) 2016b.

Information about best practices can be found in Federal Ministry of Labour and Social Affairs (BMAS) 2011c.
It is possible for working time to exceed ten hours. A collective agreement can stipulate that, for example, working time is extended to over ten hours on working days in the case of readiness for work (e.g. security services) or on-call service (e.g. hospitals, works fire brigades), and in special circumstances this is also possible without this extension being offset (opt-out). There are also certain sectors (agriculture, treatment-, long-term care and care-services, public service) where longer working times can be permitted by means of a collective agreement. In addition, the supervisory authorities can permit longer daily working times in certain cases, for example for shift work, construction and assembly sites, and seasonal and campaign-based work.

Derogations from the 11-hour daily rest period are also possible. For example, in some sectors (e.g. medical, long-term care and care facilities, the hospitality sector, transport businesses, agriculture and livestock farming) the rest period can be reduced to ten hours, if the reduction is offset within four weeks by the extension of another rest period to at least 12 hours. A collective agreement can also stipulate a reduction of up to two hours in the rest period, resulting in a nine-hour period, provided that this is required by the type of work. Moreover, social partners can allow for corresponding regulations to be introduced in a works agreement or an agreement between the employer and staff council.

If employees work in their leisure time (rest period), this must, in principle, be regarded as working time within the context of the Working Time Act. The employer is responsible for ensuring that working times exceeding eight hours on working days are recorded. In general, the employer has an obligation to ensure that employees comply with the statutory regulations. The Working Time Act does not apply to senior staff, however.

In the event that the stipulated rest period, generally eleven hours, is interrupted, it starts again from zero. The EU Working Time Directive offers no leeway for a “de minimis arrangement” for short interruptions (e.g. writing an e-mail).

Occupational safety and health provisions, as laid down in the Safety and Health at Work Act (Arbeitsschutzgesetz) and the associated ordinances, play an important role in shaping specific working conditions. Risk assessments must also be carried out to identify the risks of mobile working, enabling the employer and works council to respond by adopting health and safety measures and workplace-level regulations.

The employer is responsible for compliance with the provisions. This remains true even if workers can largely determine their own working time and/or place of work, or if trust-based working time has been agreed. The supervisory authorities must monitor compliance.

As a result of digitalisation, workers are increasingly expected to be reachable outside working hours. The usual principles of labour law apply in this context. Workers are not obliged to be reachable by their employer in their leisure time. The only exception is if a legally permissible, contractual agreement to this effect is in place. Without an agreement of this kind, there is no obligation to work overtime.137 There is therefore no obvious need for legislative action. This does not mean, however, that no action whatsoever is needed. Some companies have now concluded widely varying, well-received agreements on non-reachability.138 The importance of such agreements is underlined by ergonomic and occupational health findings, which show, for example, that a lack of time to rest and recover and excessively long working hours can have negative impacts on workers’ health in the long term.139

The wish for sovereignty over working time and location is growing (Chapter 2.5). The Working Time Report Germany 2016 shows that the framework in place determines whether working time flexibility has a positive or negative impact on workers’ health and job satisfaction: if workers can set or have a say in their working time, “flexibility can have a positive effect on health and satisfaction and constitute a resource”;140 To strengthen workers’ rights to a say in the matter of working time and location, there is a need for expanding the options available at the workplace level and under collective agreements, and for broadening the circle of people who can make use of them, as well as a corporate culture of support for the use of these options in practice. The fact that workers have a need for flexible working models which offer them greater options regarding the scheduling and length of their working time, as well as location, e.g. home office, was set out in Chapter 2.5.141

Companies are currently still a long way from responding to the problem, however. 81% of DFK managers believe their own company has taken no steps to limit constant reachability. (...) Clarity is needed regarding reachability outside working hours. It is very rare for companies to have formal agreements on this.142

The German Confederation of Managers (DFK) reports: “Of course, Work 4.0 offers opportunities to better balance family and work commitments. What is dangerous, in my view, is a recognisable trend towards using the new forms of work solely to cut costs.”143

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137 There can be exceptions in emergency situations.
138 See, for example, Federal Ministry of Labour and Social Affairs (BMAS) 2015c.
139 See, for example, Baermann 2004; Wirtz et al. 2009; Wirtz 2009.
140 Federal Institute for Occupational Safety and Health (BAuA) 2016a, p. 133, 136.
141 German Confederation of Managers (DFK) 5 May 2015 via arbeitenviernull.de

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Works agreements and collective agreements can not only outline specific options and set out rules for their implementation, but also articulate workers’ entitlements vis-à-vis their employer. However, in view of the decline in collective bargaining coverage and the large number of workers not covered by such approaches, e.g. because they work for small companies, there is a question as to what extent individual entitlements should be strengthened. The limits of what is feasible for a company, in terms of organisation, costs and technical implementation, must be recognised in this context.

One fairly far-reaching approach that would strengthen individual entitlements in legal terms would be a Working Time Choice Act (Wahlarbeitszeitgesetz), as proposed by the German Women Lawyers Association (djb) in a widely discussed paper. It would give all workers – including those in organisations where there is no co-determination – guaranteed working time options. The core element of this approach is an individual entitlement for each worker to change his or her contractual working time, in terms of length and scheduling, as well as his or her working location. The company would only be able to refuse on urgent operational grounds. That said, this condition would be met if, for example, a working time choice strategy had been developed in an organisation and the individual’s preferred working time was not compatible with it. The German Women Lawyers Association’s proposal is based on the concept of “regulated self-regulation”, i.e. the Act would stipulate procedures, time limits and participatory rights, but it would be for the employer and works council to determine the specifics. Another option would be a right to home office working, with free choice regarding the working location. In view of the large number of activities that remain tied to a specific location, however, this “right” need not necessarily be an entitlement which – provided that it does not conflict with operational interests – is enforceable in practice. It has not been put into practice in the Netherlands or the United Kingdom, either, which are often cited as examples of countries where a right of this kind has been implemented. Workers in these countries are merely entitled to discuss their preference for homeworking with their employer, meaning that the instrument primarily provides a starting point for discussions at the workplace level.

Finally, there was a consensus in the Work 4.0 dialogue about the need for negotiated working time agreements and flexibility compromises. In this context, employers and human resources managers, as well as some works councils, raised the question of whether, in light of digitalisation and workers’ changed needs, some of the existing provisions of the Working Time Act ought to be relaxed. However, objections were also raised, pointing out that far-reaching demands, such as a shift away from a maximum daily working time to a maximum weekly working time, could lead to a reduction in time sovereignty for workers and a greater risk of negative health impacts. The Working Time Act already offers the possibility of derogating, by means of a collective agreement, from the principle of an uninterrupted 11-hour rest period after finishing work. The rest period can be cut to nine hours by means of a collective agreement if necessitated by the nature of the work and if equivalent compensatory rest periods are provided.

SHAPING THE WAY AHEAD

When it comes to protecting workers from overwork and a breakdown of the boundaries on work, and to balancing organisations’ flexibility requirements with workers’ desire for self-determination, collective agreements and works agreements seem the best means for tailoring the implementation of statutory regulations to the situation on the ground (→ box Legal Regulations). Employers and works councils and the social partners have already concluded pioneering agreements on the organisation of working time and flexible location working which achieve this for individual sectors and organisations.

In a dynamically changing world of work, ergonomic research is needed into how high standards of workplace health and safety offered by the existing legal framework can be maintained in the face of changing parameters or new forms of employment. Today, a wealth of university and non-university research is already being conducted into ergonomic and occupational health questions, for example by the Federal Institute for Occupational Safety and Health (BAuA), the research institutes of the German Statutory Accident Insurance (DGUV) or the Institute for Applied Occupational Ergonomics and Industrial Engineering (IfA). However, broader academic research is needed alongside project monitoring and evaluation, so that the health impacts of flexible employment models can better be judged. Past research into strain and recovery...
related to working time has focused chiefly on industrial work and less on forms of work in the knowledge and service sector, and has often neglected to look at work-life balance as a whole. To date, too little is known about needs, requirements and strain in relation to knowledge workers, for example, or those facing a three-fold burden in the form of working time, long commutes and family commitments. The Federal Ministry of Labour and Social Affairs is seeking to ensure that the Federal Government’s programmes give greater consideration to occupational health research and research into prevention and health and safety in future. Health and safety at work must evolve, in the conditions of a transformed world of work, into an Occupational Safety and Health 4.0 strategy (→ Chapter 4.4).

The initiative to insert a general right to temporary part-time work into the Act on Part-Time and Fixed-Term Employment (Teilzeit- und Befristungsgesetz), which is anchored in the coalition agreement, is an important step in boosting time sovereignty and moving towards working time choice. It enables workers to adapt their working time to their current life phase, without falling into a “part-time trap”. Limiting unwanted part-time work is also an important contribution to making the most of the skilled labour pool and avoiding gaps in social security, especially in old age. To make transitions between full-time and part-time phases easier for workers, the coalition partners have committed to further developing the law on part-time work. This will ensure that workers who choose to work part-time for a fixed period can later return to their previous working time. To this end, an entitlement to temporary part-time work is being created.

The right to temporary part-time work should be supplemented by further elements, however, as part of a move towards organising working time in a way which takes life phases and circumstances into account. A reliable public infrastructure is necessary, especially for childcare and long-term care. Great strides have been made more recently, particularly in expanding and improving the quality of early childhood care. However, action is still needed in relation to full-time care in schools and long-term care.

In recent years, the further development of parental leave and the Act to Improve the Reconciliation between Family, Caregiving and Work Responsibilities (Gesetz zur besseren Vereinbarkeit von Familie, Pflege und Beruf) have already created legal entitlements to family-related reductions in working time. These entitlements were introduced with the aim of taking more of a life-phase approach to the organisation of working time. Regarding financial support for working time reductions in certain life phases, income reductions could conceivably be partially offset in cases where both partners work part-time, as provided for by the models of “family working time” or a “family benefit”.

Long-term accounts (referred to as “credits” (Wertguthaben) in the relevant legislation) can be used flexibly to allow workers to take time off work for purposes defined in legislation – such as care or parental leave – or for purposes agreed with the employer – e.g. continuing vocational training, sabbaticals, the transition into retirement. They thus offer tailored solutions to many individual time requirements. To boost the availability of long-term accounts, incentives could be established to encourage SMEs, in particular, to set up credit schemes and make it possible for their workers to be released from work for longer periods. In the event that it proves unfeasible to conclude inexpensive collective contracts with providers of credit administration tools for SMEs, an alternative avenue could be for the German Federal Pension Insurance, to which credits can already be transferred if a worker changes employer, to administer the credits in agreement with employers and workers. The medium-term aim could be to conclude a general right to temporary part-time work

The chemical industry is a pioneer in this area, with its collective agreement on “Working Life and Beruf) have already created legal entitlements to family-related reductions in working time. These entitlements were introduced with the aim of taking more of a life-phase approach to the organisation of working time. Regarding financial support for working time reductions in certain life phases, income reductions could conceivably be partially offset in cases where both partners work part-time, as provided for by the models of “family working time” or a “family benefit”.143

Long-term accounts (referred to as “credits” (Wertguthaben) in the relevant legislation) can be used flexibly to allow workers to take time off work for purposes defined in legislation – such as care or parental leave – or for purposes agreed with the employer – e.g. continuing vocational training, sabbaticals, the transition into retirement.144 They thus offer tailored solutions to many individual time requirements. To boost the availability of long-term accounts, incentives could be established to encourage SMEs, in particular, to set up credit schemes and make it possible for their workers to be released from work for longer periods.145 In the event that it proves unfeasible to conclude inexpensive collective contracts with providers of credit administration tools for SMEs, an alternative avenue could be for the German Federal Pension Insurance, to which credits can already be transferred if a worker changes employer, to administer the credits in agreement with employers and workers. The medium-term aim could be to conclude a general right to temporary part-time work

The chemical industry is a pioneer in this area, with its collective agreement on “Working Life and Demographic Change”. A representative TNS survey of organisations in 2010 found that long-term accounts are set up by just two per cent of organisations in Germany (Riedmann et al. 2011). Usage is linked in particular to the size of the organisation: at 13%, the proportion accounted for by organisations with 500 and more workers was well above average in 2010.

143 See Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ) 2016, Müller et al. 2015.
144 Credits are based on a free agreement between workers and employers. This system requires workers to be able to currently forgo portions of their pay or paid time off work so that they can later be released from work for a longer period. Employers, for their part, must be willing and able to administer the credits or have them administered in such a way that they are protected in the event of insolvency, and to later release workers partially or fully from work for a longer period. See Federal Ministry of Labour and Social Affairs (BMAS) 2015e.
145 The chemical industry is a pioneer in this area, with its collective agreement on “Working Life and Demographic Change”. A representative TNS survey of organisations in 2010 found that long-term accounts are set up by just two per cent of organisations in Germany (Riedmann et al. 2011). Usage is linked in particular to the size of the organisation: at 13%, the proportion accounted for by organisations with 500 and more workers was well above average in 2010.
be for a long-term account to be opened for all workers at the start of their working life. This account would offer a foundation for collective agreements and more far-reaching reforms, which are outlined in Chapter 4.8.

- The Flexible Pensions Act (Flexi-Rentengesetz) is intended, among other things, to improve the possibility to supplement part-time work with a partial pension before reaching the statutory retirement age. Older workers will be able to organise their transition into retirement in a flexible, self-determined way reflecting their individual life plans. This is an important contribution to a life-phase approach underpinning the organisation of working time.

The existing legal framework already allows for a high level of flexibility (→ box: Legal Regulations). Should greater organisational leeway prove necessary, e.g. regarding maximum daily working times and rest periods, the Federal Ministry of Labour and Social Affairs could only envisage allowing this via negotiated flexibility compromises. These compromises would have to fulfill certain conditions (see below). They would have to facilitate tailored solutions without limiting workers’ time sovereignty or occupational health. The Ministry takes the view that a general relaxation of the Working Time Act, such as a move away from the standard of the 8-hour day in favour of a maximum weekly working time, is incompatible with the aims of health and safety at work and time sovereignty.

In the medium-term, these aims (protection from overwork and a breakdown of the boundaries on work, time sovereignty, negotiated flexibility compromises) could be enshrined in a new Working Time Choice Act (Wahlarbeitszeitgesetz). This Act could combine more options for workers in relation to working time and location with a conditional possibility to derogate from the applicable provisions of the Working Time Act (→ box: Legal Regulations). The derogation should initially be limited to two years, during which it should be trialled in specific experimental spaces in organisations (→ Chapter 5), as proposed by the IT Summit’s platform on the “Digital Working World” with regard to flexibility in working time and location. The joint recommendation is that experimental spaces should be set up at the workplace level to allow new working time and organisational models to be developed with an open mind, and specific changes to be tested directly in practice (→ Chapter 5). This idea should be expanded to also allow experimental spaces which make use of a relaxation of the Working Time Act. The evaluation of this increase in flexibility must be based on clear criteria, above all whether the aims of health and safety at work and time sovereignty are boosted by innovative flexibility arrangements.

This Working Time Choice Act should contain the following elements:

Workers should have the right (in line with the aim of “temporary part-time work”), if certain conditions are met, and within certain time limits, to choose the length of their working time. They should have a right to discuss the scheduling of their working time, even if they do not want to reduce their working time, and their place of work. Naturally, employers should also be able to discuss the scheduling of working time and place of work with employees in the event that a worker wishes to reduce his or her hours.

A conditional, limited derogation from the Working Time Act’s current provisions on the maximum daily working time and rest periods should be possible, at the worker’s or employer’s instigation, if the following conditions are met:

- A collective agreement must permit this relaxation of the law, can limit it to certain groups of workers, and define more specific requirements for working time choice at the workplace level.
- A works agreement about working time choice must be in place. At a minimum, this must include clear rules on the recording of working time and the conducting of risk assessments.
- The employees concerned must also give their individual consent to this relaxation of the law.
- This relaxation of the law must be tied to organisations’ willingness to evaluate, or arrange for others to evaluate, the resulting impacts and to make the findings available to the Federal Government. The implementation of this increase in flexibility must go hand in hand with new protective rights. For example, this could mean that the statutory maximum ten-hour daily working time may be exceeded twice at most, provided...
that this does not lead to the worker exceeding the average maximum weekly working time of 48 hours, and that the worker is given a day off no later than the following week. In any case, the existing reference periods, over which an average of eight hours per working day may not be exceeded, should be defined much more narrowly.

The outcomes of the experimental spaces should be analysed after two years to identify, among other things, innovative compromises between the social partners and at workplace level, and the impacts on job satisfaction and health and safety at work. As a next step, the outcomes could potentially be enshrined as permanent provisions in the Working Time Choice Act and the Working Time Act.

A Working Time Choice Act could help to create incentives for the negotiation of innovative working time arrangements which are tailored to the conditions in the individual organisation and are based on the general principle of “flexible, but self-determined”. This approach also reflects the fact that the opportunity of “working time choice” cannot be separated from an organisation’s human resources policy and leadership culture. How is it ensured that (temporary) working time reductions do not result in work intensification? How are temporary gaps in staffing plans dealt with? Are unnecessary requirements to be present in the workplace called into question? How can part-time work for senior staff be supported? Are skills and information shared between staff so they can stand in for each other? Ultimately, these questions can only be answered at workplace level and in the dialogue between the social partners and between employers and works councils.146

Given the immense significance of working time legislation for health and safety at work, it seems advisable to place a time limit on the opening clause allowing a relaxation of the law, in the spirit of “policy learning”. The clause would be evaluated by the Federal Institute for Occupational Safety and Health (BAuA) regarding the issues of time sovereignty and health and safety at work.

SUMMARY

- Digitalisation offers the opportunity for greater self-determination in the World of Work 4.0. However, a balance must be struck between conflicting interests and aims. Legally enshrined protection from overwork and a breakdown of the boundaries on work is essential. At the same time, there is a growing need for self-determination and time sovereignty. Negotiated working time models and flexibility compromises are thus becoming more and more important.

- The organisation of working time cannot be separated from human resources strategies, performance appraisal criteria and management cultures. New technologies can also contribute to flexibility in working time and location. Innovative approaches in collective agreements and at firm-level should therefore be developed and, where appropriate, trialled in experimental spaces (→ Chapter 5).

- To make better use of the skilled labour pool and prevent workers from becoming caught in a “part-time trap”, a general right to temporary part-time work will be anchored in the Act on Part-Time and Fixed-Term Employment (Teilzeit- und Befristungsgesetz), as provided for in the coalition agreement.

- Other starting points for more of a life-phase approach to the organisation of working time are wider use of long-term accounts, a further expansion of public infrastructure in the field of childcare and long-term care, and more self-determined transitions into retirement.

- A more far-reaching reform would be a Working Time Choice Act (Wahlarbeitszeitgesetz), which would combine more options for workers in relation to working time and location with a conditional possibility to derogate from certain provisions of the Working Time Act, on the basis of an agreement between the social partners and at firm-level. This Act should initially be introduced for a two-year period and trialled in experimental spaces.

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146 The importance of workplace-level factors in the acceptance and uptake of working time options is shown, for example, by the findings of the “Working time options over the life course” research project, Klenner/Lott 2016.
4.3 THE SERVICE SECTOR: FOSTERING GOOD WORKING CONDITIONS

Over 70% of employment is now in the service sector. The focus must be on growing, forward-looking sectors and, accordingly, it is important not to develop the strategies for “Work 4.0” by taking industry as the starting point. To achieve “good work” for as many workers as possible amidst the digital revolution, it is essential to place the transformation processes in the social service sectors, in particular, starting point. To achieve “good work”--- » The care work sector will have

A strong and competitive manufacturing sector will remain the major foundation for innovation, productivity and skilled employment in future. At the same time, services relating to industrial production and products are emerging in new value networks. The “Labour Market 2030” employment forecast is predicting growth mainly in the area of business-related services and the social services sector (➔ Chapter 2.1).»

Particularly against the background of rising female employment and societal change, the care sector offers significant employment opportunities. Demand will continue to rise, especially in the fields of child care, long-term care and household-related services. A good and affordable supply of care services is therefore also an important contribution to securing the skilled labour base, as it relieves workers of the burden of carrying out the tasks in question. As there is limited potential for rationalisation in these occupations, they constitute an important field of employment.147

However, even services which are at relatively low risk of automation are affected by digitalisation: platforms are already acting as intermediaries for many services today. This trend can be expected to continue.

The evolution of digital platforms was an issue which permeated the entire consultation process, even beyond the concrete effects on the world of work. It became clear that platforms can primarily offer visible benefits for customers, such as greater efficiency, lower prices, additional choice and easier access. However, criticism was voiced of the trend towards monopolies, which can also have the opposite effect. It was also argued that platforms have a tendency to foster price wars, as information about quality was often overshadowed by price tags in online comparisons.»

In addition, concerns were voiced that “on-demand services” are primarily resulting in lower-paid employment with little social protection. As a consequence, the labour market could split further into core and peripheral workforces or high-paid specialists and low-paid crowd-workers. The decline in collective bargaining coverage is another relevant factor in this context. There is a “customer dilemma” here: many consumers want to enjoy the benefits of the services offered via digital intermediaries without necessarily fuelling a deterioration in working conditions. Without sufficient information, however, they cannot make an informed choice.»

At times, the trends of sharing, crowdfunding and collaborative commons were described – sometimes with reference to more visionary academic contributions from the international debate – as elements of an economic approach which is regarded as an alternative to monopoly platforms (➔ Chapter 2.2).

There is a broad consensus that potential for additional employment exists, particularly in childcare, health, long-term care and social occupations, as mentioned above. However, the working conditions are regarded as problematic, in particular the level of pay, which often does not allow for any private provision against social risks. Political action is deemed necessary both to improve pay structures and in terms of the value which society places on care work. Thus the visible employment potential in these areas is in itself not a guarantee of quality jobs work. Instead, long-term financing of adequate wages will be necessary to create a personal service sector which is fit for the future.»

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--- » The European Commission’s plan to boost the sharing economy should be opposed, because Uber & co. are attacking good standards in the field of passenger transport, for example, resulting in a deterioration in service.»

--- » The temporary agency workers and contract workers on the periphery of the core workforce could be joined by a swarm of new service providers in new forms of work based on solo self-employment and digital “day labourer” work.»

--- » Particularly in the service sector, working conditions sometimes exist which are far removed from “good work”...
and society’s willingness to facilitate good wages for skilled services. While digitalisation itself can, via productivity gains, lead to rising wages in the services sector, these possibilities are relatively limited in the field of labour-intensive personal services. New business models and an optimisation of work processes can contribute to an upgrading of occupations here, and in this context, public co-financing of socially necessary services may be a sensible approach. It leads to better wages and opens up new employment opportunities. It is also, in principle, a legitimate and tried-and-tested approach for public policy to specifically develop and support areas or sectors where there is an overarching public interest and where market mechanisms are not functioning properly.

SHAPING THE WAY AHEAD

The design of service markets and the development of business and organisational models in the service sector only partially fall within policy-makers’ remit, and the Federal Ministry of Labour and Social Affairs, for its part, has limited power to shape parameters in this area. Nonetheless, several general principles can be identified from the dialogue. Firstly, digitalisation can boost productivity in the service sector and thus facilitate higher incomes. Innovations of this kind should be supported. Secondly, thought should be given to how business models could be designed that would boost SMEs’ competitiveness compared to monopoly platforms and at the same time take the social market economy approach and pursue the vision of quality jobs in the digital age. Thirdly, working conditions should be made more attractive, especially in the care economy and socially necessary services, while giving all individuals access to these services. Reducing undeclared work in favour of jobs with compulsory social insurance coverage remains an important goal in this context. Fourthly, and most importantly, it is vital to increase collective bargaining coverage in the service sector and especially in the care sector and, looking to the future, to achieve a generally binding collective agreement for the social sector.

In response to the “customer dilemma”, the dialogue between businesses, consumer institutions, trade unions and policy-makers should be continued. In the jungle of opaque value creation processes and complex terms and conditions, customers should be able to find out what working conditions apply to services provided via digital intermediaries. Transparency should not apply solely to prices and diversity of supply. Platforms could provide reliable information about quality-related issues, such as vocational training and other qualifications, specialist knowledge, experience, etc. and, not least, offer transparent information about working conditions and social protection. Only then can consumers properly weigh up the prices and services offered and help to promote good working conditions by taking informed decisions. More debate is still needed on whether certifications or quality labels, at least on a voluntary basis, would be a possible answer, or whether other solutions entirely are conceivable.

The question of whether digital platforms require a new regulatory framework has been raised by the Federal Ministry for Economic Affairs and Energy in a Green Paper of its own. In order to maintain an SME structure in service markets and the trade sector and thus to safeguard value creation, investment and regular taxation in Germany, one option in certain sectors would be for companies working together on joint platforms to reach out to customers. Likewise, companies and self-employed workers could maintain a joint digital platform, which would have the competitive advantage of being especially attractive for potential customers by offering quality jobs and fair pay. Various models can be envisaged in this context.

One option is the old idea of a cooperative, which can take on new significance in the context of digitalisation. While many of the new digital platforms are financed via venture capital and face corresponding return expectations, a cooperative would be something like SME “crowdfunding”. Cooperatives, whether as communities with shared

--- » Verdi is pressing for service activities to be upgraded, as this is a key building block for the future of work and social justice. […] Political messages are needed which place as high a value on work with people as work with machines. 

--- » Even more robots ought to be "employed", so that people can do more skilled work and receive better support, especially in physically demanding work (e.g. in the long-term care sector).

--- » “Good services” can not only specifically enhance working conditions, but also improve living conditions and promote public welfare. Productivity gains should be redirected to areas of societal need, in particular... In the medium term, the focus should be on promoting and supporting innovations which generate jobs.

--- » In principle, employers in the metal and electrical engineering industries are committed to transparency, sustainability and responsible economic activity, but oppose any trend towards monitoring of companies by consumers (outside the existing legal framework), let alone the publication of sensitive corporate data.

--- » Even more robots ought to be "employed", so that people can do more skilled work and receive better support, especially in physically demanding work (e.g. in the long-term care sector).
values or “merely” shared economic interests, lend themselves as an alternative organisational model for centralised platforms, including in the sharing economy. On this question, too, the Federal Government must intensify its dialogue with businesses and society.

One concrete option – which also reflects the aim of a digital public administration responsive to public needs – exists in the field of household-related services. In Germany, much of the strong and growing demand for household-related services is met outside the legal framework. It is estimated that in 2015 around 80 per cent of domestic workers were not in a legal employment relationship. Targeted co-financing can make household-related services an accepted field of employment for low-skilled people, with compulsory social insurance coverage. These services are funded by the state in many countries for this reason. In addition, they can make a major contribution to allowing a better balance between family and work commitments. This could also allow previously unpaid work, often performed by women, to move into the sphere of paid work. In view of demographic trends and the possibility that digitalisation may result in low-skilled jobs disappearing in some sectors, the labour-market, social and finance policy arguments for funding household-related services must be reassessed.

The core of this proposal is that existing forms of support should be readjusted and targeted assistance provided for households in fulfilling their obligations as employers. To this end, the existing tax deduction options could be converted into a household services account, which the German office managing “mini-jobs” could administer, for example, alongside the existing “household jobs exchange”. Alternatively, private service providers could be tasked with this role. Low-income households in need of support would also benefit more from the establishment of a credit system than they currently do from applying for tax deductions when filing a tax return. The credit in the account could be used to pay social insurance contributions, or flat-rate contributions in the case of mini-jobs. When purchasing a service via an agency, a share of the costs could be paid using the account. If a household employs people in jobs with compulsory social insurance coverage, the service provider could, in line with the aim of a modern, digital administration, organise the household’s notification obligations and the payment of social insurance contributions and potentially also income tax. Funding would also be provided for the employment of solo self-employed individuals, provided that they are covered by social insurance. Social insurance contributions would then be collected via the service provider. This also applies to platforms which act as intermediaries for self-employed work. It would be sensible to begin with a pilot scheme to trial this model in a major city or region, to determine its effects on the labour market and fiscal impacts.

SUMMARY

- Digitalisation is having a special impact on service industries. Not only is it affecting the activities themselves, it is increasingly also leading to them being provided via platforms as intermediaries. A critical discussion is taking place about the trend towards monopolies in these service markets.
- For customers, platforms can have significant benefits. At the same time, there is a risk that they can lead to a deterioration in working conditions. This “customer dilemma” should be countered by measures including an agreement on social standards between businesses, consumer institutions, trade unions and policy-makers.
- In order to maintain the SME structure in service markets, companies could work together to build joint platforms to reach out to customers. Cooperatives could offer a suitable organisational form for this.

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Financial support for household-related services is one way of reducing the burden on families. However, expanding these activities must not lead to the consolidation of a precarious service sector, but instead reflect the principles of “good work”.

Forum for Progressive Family Policy (ZFF)

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\[152\] Enste 2016.

\[153\] To date, the rise in female employment has not been accompanied by a redistribution of unpaid care work between men and women. Although the female employment rate has risen to over 75 per cent, women continue to perform a much higher share of unpaid work than men: according to the Federal Statistical Office’s 2011/2013 time use survey, two-thirds of the work performed by women is unpaid, compared to just under half for men.
Collective bargaining coverage should be increased in the service and care sector and, looking to the future, should lead to a generally binding collective agreement for the social sector.

The importance of the care sector will continue to grow. Attractive working conditions are particularly necessary in this area. Public co-financing is useful in the case of socially necessary services delivered by the private sector. For household-related services, a new model of a household services account and digital administration would be a suitable approach to support households.

Germany has a long tradition of humanising the world of work. An activity is regarded as “humane” if it does not have a negative impact on workers’ health, wellbeing, and performance capabilities. Both the Occupational Safety Act (Arbeitssicherheitsgesetz) and the Safety and Health at Work Act (Arbeitsschutzgesetz) enshrine the principle that work should be designed in accordance with human needs: effective health and safety standards at work are key to preventing negative health impacts. Yet health is not merely the absence of disease. Thus, a job can only be regarded as humane if it reflects the worker’s skills, allows individual potential to be realised and individual competencies to be developed, and in this way contributes to the worker’s physical, mental and social wellbeing.

ISSUES RAISED IN THE CONSULTATION PROCESS

The consultation process showed, on the one hand, that the digital and technological transformation may not only help foster health and safety in the workplace, but also help to create more humane working environments in the broader sense. “Gute Arbeit”, approaching the ideal of a humane activity, could be available to more people than in the past. Adaptive assistance systems and robots are today already taking on physically demanding, hazardous and monotonous tasks. Workers could thus have more time in future for the creative, managerial and interactive aspects of their work.

On the other hand, the dialogue also made clear that demands facing workers in the digital transformation are changing rapidly, as the number of activities dominated by cognitive, information-related and emotional factors is steadily rising. In many occupations, a shift is taking place from physical to primarily cognitive tasks. Then there are overarching trends such as the breakdown of the boundaries between private and working life, work intensification, greater flexibility and mobility. All of these were discussed not only in terms of the opportunities they offer, but also in terms of the risks they pose. For, although the causes are primarily rooted in a combination of personal resources and changing

--- » I believe it is important to reduce psychological strain and cushion the effects of time pressure. To achieve this, however, one thing first needs to change: our philosophy of life «

21 Apr. 2015 via arbeitenviernull.de

--- » In the case of solo self-employment – as well as telework and mobile working – greater flexibility initially results in more working time sovereignty. However, the positive effects associated with this can often go hand in hand with work intensification or a breakdown of the boundaries on work, with corresponding negative impacts on the worker’s safety and health (physical and mental health risks, accidents, incapacity for work) «

German Statutory Accident Insurance (DGUV)

154 World Health Organization (WHO) 1946.
155 German Ergonomics Society (GfA) 1999.
Regarding the issues relating to “work intensification”, the employer must not be held solely and prematurely responsible. It is impossible to generalise about whether the perception of work intensification is due to external influences or certain types of behaviour on the part of the worker. Against this background, some responses to the Green Paper recommend that occupational health research should be boosted significantly.

SHAPING THE WAY AHEAD

The Joint German Health and Safety Initiative (Gemeinsame Deutsche Arbeitsschutzstrategie, GDA) is the nationwide platform for health and safety at work, supported by the Federal State, the Länder and occupational accident insurance funds. It is the foundation for transforming the occupational health and safety system along the lines sketched above. The stakeholders in the GDA seek to ensure that a long-term prevention policy is pursued at all levels of the occupational health system, and practical improvements are achieved for workers in terms of health and safety at work. In this context, they coordinate with the social partners and other stakeholders, such as the health insurance funds. Occupational Safety and Health 4.0 is already on the agenda: one GDA aim is to protect and improve health in relation to work-related psychological strain. The Work 4.0 dialogue is taking up this aim. However, in contrast to the case of hazardous substances, for example, the approach cannot be to minimise psychological stress across the board. In the past, many humanisation projects have actually increased the demands on workers by enriching and expanding the content of their work in order to make it more interesting, varied and thus more humane. In the organisation of work, it is essential to avoid forms of working time, workflow, communication and collaboration which place undue psychological strains on workers. In view of the increasing flexibility regarding working time and location, however, greater demands will also be placed on workers’ individual responsibility and health literacy.

Occupational health care is a good instrument for educating and advising workers about individual health risks in their work. Alongside the need to enhance health literacy, it is important, above all, to retain the priority of circumstantial prevention as a fundamental principle in occupational safety and health in the digitalised world of work.

116 Böhm 2016
118 Federal Institute for Occupational Safety and Health (BAuA) 2015.
These issues must in future be placed at the heart of health and safety at work. A key element of the GDA’s programme on work-related psychological strain is therefore to inform and upskill in-company and external health and safety stakeholders in this area. The Federal Ministry of Labour and Social Affairs will seek to ensure that the GDA’s programme to protect and improve health with regard to work-related psychological strain is continued beyond 2018.

Furthermore, the Ministry is helping to lay the scientific basis for the occupational safety and health system of the future. For example, the Federal Institute for Occupational Safety and Health carried out a wide-ranging research project studying and assessing the current state of knowledge (including measurement standards and practical feasibility) on factors with harmful or beneficial impacts on health. Initial results suggest that the following four areas have a major influence on mental health in the world of work: the nature and organisation of activities; the duration, scheduling and distribution of working time; management and organisational structures, and technical factors. In addition, the project’s results show that it is essential to look both at factors with a beneficial influence on health (resources) and factors with a harmful influence on health (stressors). Greater attention should also be paid to the interactive work required by many occupations and the associated emotional strain, and the dynamics between work and other spheres of life. Phases of mental stress or illness experienced by individual workers should not be pathologised. In light of these findings, a modern system of Occupational Safety and Health 4.0 should include the following elements:

- An adaptation of safety strategies in the light of new technologies, e.g. human-robot collaboration.
- Advice and support for senior staff and workers in relation to work from flexible locations.
- Fostering a sustainable culture of prevention in organisations, in close cooperation with the relevant departments.
- Further training and empowerment of workers to ensure they are better prepared to take on an increasing personal responsibility for their own health.

- Developing executives’ skills with regard to changing working conditions.
- Preparing supervisors to deal with a wider spectrum of issues (e.g. the growing importance of psychological strain) and placing clearer emphasis on advice and support rather than checks and sanctions.

In addition to establishing a modern occupational safety and health system, the Federal Government should investigate digitalisation’s impacts on working conditions in experimental spaces with a view to developing innovative approaches. The aim – continuing in the tradition of earlier such programmes – should be an interministerial innovation, research and transfer strategy for labour research.

The Federal Ministry of Labour and Social Affairs will continue, with the “Mental Health in the Working World” (psyGA) project which has been supported as part of the New Quality of Work Initiative (INQA) since 2009, to ensure the reliable transfer of state-of-the-art knowledge about mental health into concrete practice in organisations. Workers’ knowledge, literacy and perspectives are becoming more and more important in ensuring that organisations are fit for the future. INQA will therefore focus even more on providing professional support for participation-oriented change processes. This includes the “Sustainable Corporate Culture” audit (Audit „Zukunftsfähige Unternehmenskultur“) and the SME advisory programme “Corporate Value: People” (unternehmensWert:Mensch, uWM). The audit is the first service of its kind which is supported by employers’ associations, trade unions, chambers, the Federal Government, the Federal Employment Agency and the Länder. It enables companies and administrations to obtain a holistic picture of where they stand with respect to upcoming challenges. The uWM programme, co-financed by the European Social Fund, specifically supports SMEs by providing professional advice in developing a modern, staff-oriented human resources strategy.
If digital and demographic change is viewed from the perspective of securing the labour supply, clear incentives emerge for companies to invest in good working conditions, which enable their employees to participate in working life for longer, in good health, with skills and strong motivation. This is because, firstly, the demand for qualified and flexible skilled workers will rise due to digitalisation and technological progress. Secondly, much of the pool of skilled labour will be exhausted in the near future as a result of demographic change. Traditional levers, such as targeted investment in the education system, a modern approach to the recruitment of young people, and the mobilisation of groups who have previously been at a disadvantage in the labour market, are important but no longer sufficient to meet future demand for skilled labour. Nor will skilled migration be able to fully compensate for the shortage. Consequently, maintaining individual employability will be of immense importance.

Although some companies are setting a good example, on the whole not enough is being done so far to address the challenges of a changing working society. For example, while there has been a decline in accidents at work over the past two decades, the number of days lost due to mental illness has increased steadily. Moreover, the average length of absence is much longer than for physical illnesses and has undergone a marked increase in recent years.

It is unclear whether the necessary investment in good working conditions at the workplace level is being held back by a lack of information, a deliberate or unconscious externalisation of responsibility, or the cost of relevant measures. What is clear is that companies with working conditions which are particularly beneficial for health and learning are not only investing in their own competitiveness, but are also reducing the burden on the social security systems and thus, ultimately, other employers as well.

One possible approach to account for these external effects would be to develop incentives for organisations which invest in maintaining employability and good health. Well-designed economic incentive structures can be effective catalysts for necessary changes at workplace level beyond statutory minimum standards.

To accelerate the introduction of technologies and assistance systems with a positive health impact, a support programme for SMEs is conceivable.

SUMMARY
- Health and safety at work must be adapted in light of not only the digital transformation, but also demographic change, the effects of which are increasingly being felt. To this end, it will be necessary to focus more on the psychological strain of work, alongside its physical demands.
- The Federal Ministry of Labour and Social Affairs will therefore seek to further develop health and safety instruments into an “Occupational Safety and Health 4.0” strategy. As part of this, the Joint German Health and Safety Initiative’s programme to protect and improve health in relation to work-related psychological strain will be extended beyond 2018.
- In addition, the Federal Ministry of Labour and Social Affairs will contribute to the development of an interministerial Work 4.0 innovation, research and transfer strategy. The New Quality of Work Initiative INQA, in particular, will continue to ensure in future that knowledge and innovations are properly transferred and implemented in practice.
4.5 EMPLOYEE DATA PROTECTION: SAFEGUARDING HIGH STANDARDS

More and more people are using digital devices and applications in their work, generating growing quantities of personal data, which can be collected, stored, and analysed. The mixed implications of Big Data\(^\text{3}\) (\(\rightarrow\) Chapter 2.3) also apply with regard to employee data. On the one hand, it promotes the optimisation of workflows, business efficiency gains, the monitoring of performance, quality and success in the workplace, occupational safety and health, and continuing vocational education and training. On the other hand, it also paves the way for a comprehensive, permanent monitoring incompatible with privacy rights. This is also one of the fundamental legal conflicts surrounding employee data protection: the need to strike a balance between companies’ legitimate interests in relation to the protection of their property, the monitoring of employees’ performance, and adherence to compliance rules\(^\text{164}\)\(^{1}\), on the one hand; and the rights of workers to informational privacy\(^\text{3}\)\(^{2}\) on the other, which was formulated by the Federal Constitutional Court in 1983 as a general principle for data protection.\(^\text{165}\)\(^{2}\)

The protection of employees’ data is particularly sensitive because their dependence on their employers places them in a vulnerable position. Factors such as the requirement to obtain consent from individuals for the processing of their data in the work context, and the structural imbalance in employment relationships, must therefore be taken into consideration. For this reason, companies’ scope for action is limited by the collective right to co-determination\(^\text{3}\)\(^{1}\) in relation to technical devices (Section 87 (1) no. 6 of the Works Constitution Act (Betriebsverfassungsgesetz)). This provision is becoming increasingly important, as most activities are now performed using digital devices which are covered by this provision.\(^\text{166}\)

**EMPLOYEE DATA PROTECTION – FROM THE FEDERAL DATA PROTECTION ACT TO THE EUROPEAN GENERAL DATA PROTECTION REGULATION**

An intensive debate about specific rules for the protection of employee data has been taking place in Germany since the entry into force of the Federal Data Protection Act (Bundesdatenschutzgesetz) in 1977. One result of this debate was Section 32, with which the 2005 Grand Coalition anchored employee data protection in the Act for the first time. The fact that, so far, no more far-reaching, differentiated regulations on employee data protection have been adopted which would have settled the debate is not due to a lack of political will (several governments have published drafts); rather, it has proved impossible so far to find a viable compromise which would have articulated and balanced the various interests well enough to command the necessary majority support. The rapid pace of technological progress has contributed to the difficulty by creating more and more new needs for regulation, as has the complexity of the subject.\(^\text{167}\)

This does not mean, however, that employee data is poorly protected in Germany: the general principles enshrined in German data protection legislation, such as purpose limitation\(^\text{3}\)\(^{3}\), data minimisation\(^\text{3}\)\(^{3}\), the transparency requirement\(^\text{3}\)\(^{3}\), necessity\(^\text{3}\)\(^{3}\) and proportionality\(^\text{3}\)\(^{3}\), naturally also apply to the handling of employee data. But in some respects there is a lack of legal certainty and clarity: the legal framework for employee data protection is provided by the interaction of many provisions and principles at European, national and international level, and it has been developed further over the decades by court decisions which are “in some cases difficult for the workers concerned to understand”.\(^\text{168}\) In addition, from May 2018 a new, single legal framework for data protection will apply in all EU Member States in the form of the European General Data Protection Regulation\(^\text{3}\)\(^{4}\). This has many advantages (\(\rightarrow\) Chapter 2.3), but the necessary implementing legislation will initially complicate the legal situation at national level further.\(^\text{169}\)

The European General Data Protection Regulation contains an “opening clause” in relation to employee data protection which empowers Member States to issue more specific rules on data processing in the employment context.\(^\text{170}\) The German Federal Government was among those who pressed for the inclusion of this opening clause.

To adapt German legislation, a “Data Protection Adaptation and Implementation Act EU” (Datenschutz-Anpassungs- und Umsetzungsgesetz EU) is currently being drafted. The Federal Data Protection Act in its current form is to be replaced, but the relevant section for employee data protection, Section 32, which

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\(^{(1)}\) Thüsing 2014.

\(^{(2)}\) Papier 2012, Simini 2016.

\(^{(3)}\) Wedde 2016.

\(^{(4)}\) Däubler et al. 2016.
Companies require legal certainty, on the one hand, and flexibility for their day-to-day operations, on the other. It is therefore essential to maintain the scope for practical solutions to be created via works agreements or via consent from employees for their data to be processed. In addition, the international transfer of data needs to be improved, in particular by making it easier to transfer data between associated companies.

Pressure for regulations on employee data protection stems from three main trends: firstly, the move away from clear geographical locations for data storage and processing and the shift from static to dynamic software development, which makes it more difficult to identify responsible parties; secondly, applications capable of fully documenting, evaluating, analysing and monitoring workers’ performance and work behaviour, from work at a desktop computer to the use of company or official smartphones, data glasses or data gloves; thirdly, applications capable of analysing workers’ personalities in order to evaluate them or predict their future behaviour, for example speech analytics or analysis of corporate social networks.

Existing law already sets a series of standards against which the legality of such applications must be measured. The collection, processing, and use of data for employment-related purposes is permitted if it is necessary for hiring decisions or, after hiring, for carrying out or terminating the employment contract. In other words, the handling of employees’ personal data is limited to a specific, predetermined purpose, and must be both appropriate and necessary for this purpose. Assessing appropriateness includes a check on whether a certain approach is also proportionate, and both the principles of data reduction and data minimisation must be taken into account.

Court decisions have specified how these standards are to be interpreted in some circumstances, but not others. Certain principles, on which there is a broad consensus, also emerge in the relevant literature. The guiding idea is that, in all cases involving checks and monitoring, a careful distinction must be made between permissible purposes on the one hand, such as workflow improvement and performance evaluation by means of occasional data collection, and unlawful, permanent monitoring on the other. For example, location tracking can be justified if it is intended to ensure workers’ personal safety, assist aid efforts in the event of an accident, or provide protection from crimes committed by third parties, i.e. to ensure employees can carry out their work safely. Another lawful purpose could be the desire to organise operational processes more effectively, for example in the case of shipping or taxi companies. The same applies to the optimisation of work carried out off-site, for example on construction sites. However, it is not permitted to use legitimately collected data to subject staff to comprehensive monitoring of their performance and behaviour.

The increasing digitalisation of the world of work requires clear regulations on employee data protection, as digitalisation also opens up far-reaching monitoring possibilities for employers (e.g. social media monitoring, real-time monitoring, linking data with staff profiles, communication analysis, etc.).
In principle, it could be argued that every form of permanent electronic monitoring serves a contractual purpose and, as it enables the employer to ensure workers are actually performing in accordance with their work contracts, should therefore be permitted. Given the particular nature of digitalised monitoring, however, the principle of proportionality applies. This form of monitoring registers even the smallest behavioural anomalies, even those unnoticeable to a human observer, records them and makes them permanently analysable. This runs counter to the principle of proportionality in most cases.\textsuperscript{173}

Similar arguments must be weighed up when it comes to analysing workers’ personalities. Regarding the analysis of corporate social networks, one example of an acceptable purpose might be to improve intra-corporate communication – for example between different sites. However, it is generally held that it would not be permissible to engage in data retention and analyse the available data for different purposes. The relevant literature has found that all-encompassing objectives under which the analysis of employees’ personal data essentially constitutes an end in itself to be impermissible.

The collection and processing of fitness and health data, which constitutes a special category of personal data (Section 3 (9) of the Federal Data Protection Act (Bundesdatenschutzgesetz)), require the employees’ consent, and stricter requirements apply for this consent (Section 4a (3) of the Act).\textsuperscript{174}

As these examples show, the general provisions on data protection in the law as it stands place limits on the new possibilities emerging as a result of digitalisation and Big Data\textsuperscript{9} without shutting them down entirely. However, fundamental considerations must be weighed up anew in each individual situation. For some issues, the law has been developed further by court decisions, while for others this has not happened due to the absence of litigation before the courts. A wealth of specialist literature indicates, however, that there is a significant need for discussion and that the legal situation is not always entirely clear for companies, in particular; nor for their employees.

**ISSUES RAISED IN THE CONSULTATION PROCESS**

Growing awareness of the theoretical, abstract possibilities of Big Data\textsuperscript{9} and data mining, as well as serious breaches of data protection in isolated cases\textsuperscript{175}, have reinforced an existing sense of unease felt by much of the population when it comes to the issue of data protection (\textit{\textsuperscript{17}}Chapter 2.3). Almost two-thirds see this as the area with the greatest need for statutory regulation in the process of shaping the digitalisation of the world of work.\textsuperscript{176}

Trust in data protection is an important prerequisite for the acceptance of digitalisation in both the economic sphere and the labour market, and this has been grasped not only by EU institutions, but also by many companies, which welcome plans for the European Digital Single Market to be designed in such a way that it ensures a “responsible approach to data in the digital world”.

In the Work 4.0\textsuperscript{9} dialogue, too, most opinions on the Green Paper emphasised the importance of data protection. Trade unions and social associations, in particular, advocate a specific Employee Data Protection Act.

No side is calling for a reduction in the existing level of data protection. However, employers’ and business organisations emphasise that “striving for greater legal certainty must not lead to over-regulation with unnecessary bureaucracy and few practical benefits.”

The fault lines are particularly clear when it comes to works councils’ participatory rights in relation to the introduction of technical devices (Section 87 (1) no. 6 of the Works Constitution Act). On this point, companies and employers’ associations would like to see “modernisation”, in the sense of “limiting” the right of co-determination “to those cases in which monitoring is actually intended”. In all other cases – i.e. even if technical devices generate data which could potentially be used for monitoring, but the employer does not intend to make use of this possibility – the works council’s right of co-determination could be replaced, it is suggested, by a right for the works council to be informed of significant changes to technical devices. It is also proposed that the

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173 Krause (2017)
174 Kepp/Sokoll 2015.
175 Selig 2011
right of co-determination could be restricted to the initial introduction of a system or significant changes to it. 

The other side is calling for co-determination to be strengthened: any kind of opt-out from a high level of data protection is opposed by trade unions. It is also proposed that co-determination rights should be flanked by additional provisions in collective agreements.  

### SHAPING THE WAY AHEAD

The central challenge lies in maintaining Germany’s high level of employee data protection amidst the digital transformation and at the same time making use of the opportunities offered by technological progress to shape the world of work.

In light of the challenges set out above, especially the need for legal clarity on digital applications, as well as the necessary implementation of the European General Data Protection Regulation in Germany, there is a clear and present need for action. The General Data Protection Regulation offers national legislators the option to introduce more specific provisions on employee data protection, and this option should be used. The main aim should be to avoid a reduction in the existing level of protection, and to provide greater legal certainty and clarity for employers and workers. This would also help to increase trust. How this is to be implemented from a legislative perspective must be examined closely.

In substantive terms, a reliable basis is needed for the legal assessment of technological developments, now and in the future; at the same time, there must not be an obstacle to technical innovation. This means that principles must be formulated which, on the one hand, allow data to be used selectively, for example to optimise business processes, boost efficiency, measure performance generally in the organisation, ensure health and safety at work, or identify where training is needed. On the other hand, however, secret checks, permanent monitoring of work behaviour, and the creation of comprehensive movement and behavioural profiles must remain generally prohibited, and this may have to be made more explicit in the law. The use of biometric systems and socio-psychological analysis as well as the collection of employees’ health-related data should – again, explicitly – be restricted to specifically regulated and limited purposes.

Further research and assessment is needed with regard to whether technical solutions such as encryption and anonymisation could also help to resolve data protection problems, and whether these could be made mandatory.

At present, no explicit “right of co-determination in relation to data protection” exists. In practice, however, Section 87 (1) no. 6 of the Works Constitution Act gives the works council a right of co-determination in relation to many processes in the digital working world. Originally, this provision had a relatively narrow scope of application, but due to the wider use of IT in the digital working world, in practice it now covers a large proportion of hardware and software use. This not only includes the use of cameras, biometric access controls, smart glasses and mobile phones, for example, but also software which processes user data (including data collected by non-technical means). The introduction and use of such devices, or even a mere software update, cannot go ahead without the works council’s consent.

As this provision was widely discussed in the consultation process, the Federal Ministry of Labour and Social Affairs will examine whether and to what extent there is a need for legislative action in this area. In view of the need for rapid decisions on the use of devices in cases where co-determination is mandatory, it must also be ensured that works councils have the resources to be able to act as competent discussion partners for employers in corporate change processes (Chapter 4.6).
The pace at which the technical possibilities are evolving and the complexity of applications are generating uncertainty amongst both employers and works councils, and particularly in SMEs, around whether and how statutory provisions on data protection can be implemented in practice. Against this background, the Federal Ministry of Labour and Social Affairs is planning to develop an “Employee Data Protection Index”. The aim is to develop well-researched, application-focused quality standards for employee data protection, which – by providing a tool for self-assessment or for certification – make employee data protection in organisations easier to compare and more manageable.

In view of the decades-long debate, the changed legal framework and the fact that technical possibilities and applications are not yet fully understood, the Federal Ministry of Labour and Social Affairs will set up an interdisciplinary advisory council in the near future, involving experts with a background in labour law, occupational health and technology; experts and practitioners in the field of data protection; and the social partners. The advisory council will be tasked with taking stock and preparing sector-specific legal provisions for employee data protection, with a binding timetable. The Federal Ministry of Labour and Social Affairs will also ensure that the provisions on employee data protection are reviewed at suitable intervals to determine whether they are still sufficient in light of technological developments.

**SUMMARY**
- Action is needed on employee data protection as a result, firstly, of continuing technological developments and the growing importance of digital applications in the world of work, and, secondly, of the new European legal framework, the European General Data Protection Regulation, which is due to enter into force in 2018. The Regulation contains “opening clauses” which allow specific provisions at national level in certain areas.
- The Federal Ministry of Labour and Social Affairs will safeguard statutory employee data protection in two steps. In the framework of the planned “Data Protection Adaptation and Implementation Act EU” (Datenschutz-Anpassungs- und Umsetzungsgesetz EU) implementing the European General Data Protection Regulation, which will replace the Federal Data Protection Act (Bundesdatenschutzgesetz) in its present form, it will ensure that the crucial section for employee data protection (Section 32 of the Federal Data Protection Act), which regulates “Data collection, processing and use for employment-related purposes”, is retained. The tried-and-tested approach of regulating data protection at the firm-level in works agreements will also remain possible.
- As a second step, the Federal Ministry of Labour and Social Affairs plans to make full use of the leeway the European General Data Protection Regulation offers national legislators for more specific provisions. To this end, it will set up an interdisciplinary advisory council which will support the Ministry in preparing these separate legal provisions on employee data protection on the basis of a stock-taking exercise and with a binding timetable.
- In addition, the Ministry will examine whether there is a need for legislative action in relation to the Works Constitution Act (Betriebsverfassungsgesetz).
- The Federal Ministry of Labour and Social Affairs will support the development of an “Employee Data Protection Index”, on the basis of which well-researched quality standards can be developed to assist companies and works councils, especially in SMEs, in the practical implementation of statutory data protection.
4.6 CO-DETERMINATION AND PARTICIPATION: TRANSFORMATION BASED ON SOCIAL PARTNERSHIP

In the German model of the social market economy, institutional co-determination of workers at the workplace level (under the Works Constitution Act (Betriebsverfassungsgesetz)) and at the company level (under the statutory provisions on co-determination in supervisory boards) has always played a vital role. Its benefits in weathering crises and structural upheavals have repeatedly been demonstrated.

The changes in markets and companies in recent years, which have been accelerated in particular by digitalisation and the increasing transnationalisation of value chains and work contexts, are also having a direct impact on industrial relations (Chapter 2.6). The best chance of successfully coping with current and future transformations in the world of work exists if companies and workers shape them in partnership and fairly consider and balance the needs of both sides.

ISSUES RAISED IN THE CONSULTATION PROCESS

This fundamental idea runs through many responses to the Green Paper on Work 4.0 published by the Federal Ministry of Labour and Social Affairs, and the vast majority of participants in the consultation process regard the involvement and participation of workers as a key factor for successfully shaping tomorrow’s working world. That said, the responses submitted by workers’ representatives and business associations also reveal very different views on the question of whether or not recent developments in the world of work make it necessary to expand existing co-determination regulations.

Notwithstanding this, it makes sense to primarily use the existing instruments of institutional co-determination, not least because, as was also made clear in the consultation process, co-determination continues to command broad and undiminished support in society, among workers – including senior managers – and also many employers.

That said, the conclusions and reflections set out below should not be seen as a general co-determination strategy. Instead, they relate to specific questions regarding workers’ participation in changed corporate and organisational structures of Work 4.0.

What is vital in this context is, primarily, a willingness and ability to reach a consensus through negotiation. This requires structural conditions and forums for such negotiations, as well as an ability to compromise and a willingness to learn from past developments. Looking at individual forms of democratic participation and institutional co-determination together can benefit both, and can increase workers’ opportunities for participation as a whole. Particularly in sectors such as the ICT industry, which has no tradition of social partnerships, experiments with new participation strategies and agile forms of work have been taking place, self-organisation is expected, and innovation processes are changing.

Many workers also want to be directly involved. Given that new ways of organising work are placing growing emphasis on horizontal concentration of knowledge, possibilities for participation by individual workers and self-organisation in teams, it is also in the organisation’s best interest to strengthen participatory elements at workplace level. Agile markets need agile corporate decision-making processes to allow rapid responses to changes in customer preferences or other market requirements. In the long term, this is only possible with the transition being driven by individuals and self-organisation. This can be encouraged by giving workers, including senior managers, the willingness and ability to learn from past developments. Looking at individual forms of democratic participation and institutional co-determination together can benefit both, and can increase workers’ opportunities for participation as a whole. Particularly in sectors such as the ICT industry, which has no tradition of social partnerships, experiments with new participation strategies and agile forms of work have been taking place, self-organisation is expected, and innovation processes are changing.

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Companies are currently seeking a blueprint for the future world of work. Companies as varied as the industrial group Robert Bosch GmbH and the IT service provider Fiducia & GAD IT AG have begun to set up labs to experiment with new approaches in practice. In future, these companies want to drive forward disruptive innovations and new business models in their organisations without jeopardising their stability, and they want to include and involve their staff in this process.

At Robert Bosch GmbH, staff and managers are looking at the question of how it is possible to successfully move towards becoming an “agile company”, in view of the rapid changes in the automotive industry. Agile forms of work, new requirements for managers and even changes in the corporate culture are being developed in pilot units. Meanwhile, Fiducia & GAD IT AG, as the IT service provider to the cooperative banks, is actively grappling with the disruptive transformation of the financial industry. The focus here is primarily on new ways of generating innovations and their implications for staff – from working time to new demands.

“We’ve learned that we’re not dealing with a normal change process; we’re facing a genuine revolution,” explains Jörg Staff, member of the executive board and labour director of Fiducia & GAD IT AG. As open-minded experimental spaces, both companies’ labs take an agile approach in their work. Instead of the focus being on executing a predefined project plan, tasks and objectives are set in short cycles. Workers and managers from the departments concerned produce concrete outcomes in sprints lasting a few weeks. “It’s very important to us that solutions aren’t developed in a vacuum; instead, employees must be at the heart of the process and involved from the outset,” stresses Alfred Löckle, the chairman of the central works council at Robert Bosch GmbH.

The basis for the labs’ success is a steering committee with high-profile members, structured on the basis of social partnership. The committee ensures that the outcomes are anchored in the wider company and uses these outcomes to define the way ahead in the transformation process. The fact that it is structured on the basis of social partnership ensures that the steering committee promotes a long-term perspective for the labs, and gives the workforce the trust they require to accept change processes. As these labs represent uncharted territory for the companies concerned, they are drawing upon independent academic support from the Institute of Social Science Research Munich (ISF München).
The fundamentally positive, SME-driven culture of internal compromise in e-commerce and distance selling has always resulted in much less friction in organisations. Both employers and employees value direct dialogue, which allows key issues to be regulated without recourse to associations or trade unions. 

German E-Commerce and Distance Selling Trade Association (bevh)

The economic environment in Germany has, for years, been characterised by sweeping corporate and group restructuring, both organisational and legal in nature, takeovers, spin-offs and mergers. By international standards, it is remarkable how smoothly these processes have taken place, which is thanks in no small part to co-determination. 

German Confederation of Managers (IDF)

Likewise, when dismissals for operational reasons have to be negotiated with management, guaranteed rights for employee representatives are an important safeguard for negotiations on an equal footing. Yet only a minority of employees in Germany – just four in ten – are currently represented by a works council. They exist in fewer than one in ten organisations with five or more workers, and it is only from about the level of 100 workers that organisations with a works council are in the majority.

It is far from the case that workers in organisations without a works council inevitably have inadequate opportunities for participation, as such opportunities can also be realised outside the statutory framework. Yet if there is no works council, it is at least questionable how consistently available the conditions are for the two sides to negotiate compromises on an equal footing in difficult times. Ultimately, co-determination must be based on rights, not promises. Where negotiating compromises and developing a framework for change processes leads to friction, and at the latest when rights also have to be secured in court, only institutional co-determination offers reliability for workers. This makes the legal framework for the establishment and functioning of works councils all the more important.

SHAPING THE WAY AHEAD

As an outcome of the Work 4.0 dialogue, the Federal Ministry of Labour and Social Affairs has identified a total of four key elements in consolidating and strengthening the negotiation of flexibility compromises by the social partners in the coming years. These are: stabilising and strengthening collective bargaining structures in Germany, widening the basis for participation by workers, safeguarding adequate rights and resources for co-determination in the digital world of work, and safeguarding standards for corporate co-determination – including in Europe.

To create solid foundations for shaping the world of work on the basis of social partnership, the Federal Ministry of Labour and Social Affairs is vigorously pursuing the Federal Government’s shared goal of boosting collective bargaining coverage in Germany. One particular challenge in this context is the fact that the lines between different sectors will continue to blur as a result of digital structural change. Widely binding collective agreements can be extremely helpful in managing change processes, especially in the era of digitalisation. For collective bargaining coverage allows working conditions to be regulated even in areas where the state would find it difficult or impossible to achieve a comparable level of clarity, customisation and detail via general legislation. The financial and economic crisis is just one of the situations which have highlighted how tailored and flexible collective agreements are today, and how fully they take into account the differing concerns of organisations even within the same sector.

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183 Ellguth/Kohaut 2016.
One way to boost collective bargaining coverage could be to create incentives for membership in employers’ associations and trade unions, in order to create a broader legitimising basis for regulations in collective agreements. The Federal Ministry of Labour and Social Affairs is examining whether such incentives, particularly in relation to employers’ associations, can be implemented in legislative initiatives, for example on the regulation of temporary agency work or occupational pension schemes, by making collective bargaining coverage a prerequisite for the options enshrined in the legislation – in other words, allowing greater flexibility, but only via a collective agreement. The extension of collective agreements can also play a part in this. In some sectors, however, the barriers to extending collective agreements are too high. They must be lowered, with the aim of boosting collective bargaining coverage in this respect as well.

Active staff representation bodies are vital to the successful organisation of working conditions, and they are irreplaceable counterparts for management, especially in coping with disruption in the digital world of work. The Works Constitution Act’s provisions offer a tried-and-tested, stable and recognised basis for worker co-determination. In light of this, the Federal Ministry of Labour and Social Affairs is aiming to foster the establishment of works councils.

In addition, it is seeking to expand the scope of the simplified electoral procedure introduced by the 2001 reform of the Works Constitution Act so that it applies to a wider group. To date, it has applied only to organisations which have five to 50 workers with voting rights and, if agreed with the employer, organisations with 51 to 100 eligible voters. The simplified electoral procedure should be binding in organisations with up to 100 eligible voters. The provision for small organisations is agreed with up to 100 eligible voters. The simplified electoral procedure should be binding in organisations with 51 to 100 eligible voters.

Changing the thresholds for the simplified electoral procedure can also help to reduce the prevention and obstruction of works council elections. According to surveys of trade union officials, this occurs disproportionately often in small organisations with 51 or more employees. Obstructing works council elections and the activities of these councils is not a trivial offence. One important element in fostering the establishment of works councils is to improve the protection against the dismissal of employees who press for a works council to be set up. The Federal Ministry of Labour and Social Affairs is observing developments in these areas very closely, and will examine whether the Works Constitution Act’s sanctions for obstructing works council elections need to be increased, and whether and what adjustments are necessary to better protect those who press for co-determination.

There is a general consensus that the digital world of work is placing greater demands on staff representatives as a result of rapid changes and greater complexity. They have to be able to correctly assess technical and organisational developments, find approaches which reflect workers’ interests, and reach solutions in dialogue with management. A well-qualified and well-advised works council reflects companies’ legitimate interest in rapid decisions and procedures tailored to the organisation in question. A works council of this kind can assess complex IT issues and updates which are to be applied at short notice much more rapidly and thus react much more quickly, which in turn would help to significantly speed up co-determination processes in the digital working world, as called for by employers. In other words, there is a need for regular skills development, on the one hand, and access to expert support, on the other.

As the law stands, the employer must enable the works council to fulfil its function by making knowledgeable personnel available to provide information; external experts can also be consulted if this is agreed. Going beyond this, a discussion took place in the consultation process on whether works councils should be given the right to consult an expert before the introduction of new work processes and equipment, new hardware or new software.

The Federal Ministry of Labour and Social Affairs is seeking to introduce this right, which should be based on the following principle: the consultation of an expert should be limited to the right of co-determination in relation to the introduction and use of technical devices designed

--- » The co-determination process needs to become more rapid and efficient, to reflect the ever faster decision-making in the digitalised environment and changes in functional units. Greater use must be made of digital means of communication in the involvement of the works council and in the dialogue between works council members. Bavarian Industry Association (VBW)

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Co-determination applies in relation to today’s business. It is no longer suited to monitor performance and behaviour. While this would initially result in higher costs, the works council would be able to react more quickly, offering the prospect of solutions being implemented more rapidly, which could reduce costs and work. Nonetheless, given the cost companies would incur as a result of the new provision, it would be appropriate for this right to only apply in the case of companies with 300 or more employees (similarly to the right to retain a consultant under Section 111 of the Works Constitution Act).

Although the term “data protection” is not explicitly mentioned in the Works Constitution Act, in practice many works councils use their right of co-determination under Section 87 (1) no. 6 of the Works Constitution Act to conclude works agreements on data protection (→ Chapter 4.5). The Federal Ministry of Labour and Social Affairs will examine – particularly in view of the EU General Data Protection Regulation – whether and to what extent there is a need for legislative action in this area.

During the consultation process, many business associations and companies called for the works council’s right of co-determination to be limited to cases in which a technological innovation is intended to result in the monitoring of employees’ performance or behaviour. In cases where monitoring merely becomes possible as a result of the innovation, but is not intended, it was argued that the works council should only have a right to be informed. However, this would significantly water down a co-determination right in an area which is becoming ever more important in practice and which is a source of great concern for workers – even if they are not facing a specific case where an intention to introduce monitoring has been expressly stated, or the possibility of monitoring is to be introduced. This, in particular, is an area where it should be in the interest of both sides for solutions to be reached in agreement between management and qualified staff representatives.

However, the suggestion that the way in which works councils operate needs to change in the digital era is generally valid. For example, it has long been a simple matter, in technical terms, to hold video conferences between various sites. Nor does the law as it stands prevent video conferences between works council members. However, they are not permitted at present for works council meetings, due to the important principle that these meetings are private. Unlike in the case of face-to-face meetings, it is impossible to ensure that no third party is listening in on a video conference out of view of the camera or outside the meeting rooms, or secretly recording the meeting. Video conferences also lack the element of direct face-to-face interaction, which is growing more important as work contexts become more virtual. Nonetheless, the possibility of allowing works council meetings to take place via video conference in exceptional cases could be considered. This should, however, have to be at the works council’s initiative, based on a unanimous decision, and limited to narrowly defined exceptional cases where particular urgency makes it extremely difficult to organise a face-to-face meeting. In addition, the employer would have to take technical measures to ensure that third parties would not be able to listen in on the meeting.

Staff representation on companies’ supervisory and administrative boards is also particularly important in turbulent times. In Germany, corporate co-determination can look back on decades of visible successes and a proven track record, particularly in times of crisis. The Federal Government has embedded corporate co-determination in the negotiations on European company law directives – especially on the European Company (SE) – and thus protected workers’ existing rights.

Digitalisation makes it easier for companies to be organised transnationally, particularly within the integrated European single market. However, to ensure that corporate co-determination cannot be circumvented by the use of European legal forms or the use of foreign legal forms in Germany on the basis of freedom of establishment, further regulatory steps are needed, especially at European level, so that the proven benefits of solutions negotiated on the basis of social partnership can be reaped even if companies become more international.

To safeguard existing standards, a 14th Company Law Directive on the cross-border relocation of companies’ registered offices needs to be adopted. This is a key priority for the Federal Ministry of Labour and Social Policy Options
The Federal Ministry of Labour and Social Affairs is also supporting the European Trade Union Confederation’s call for minimum standards of employee participation to be firmly anchored in Europe. To this end, negotiations should be launched on a directive on minimum standards. A directive of this kind could also respond to the issues raised in relation to the SE – the “freezing of co-determination” and the call for adjustments in the event that national thresholds are crossed – without, however, calling into question the consensus achieved on the SE itself.

At national level, the possibilities offered by company law for companies to establish subsidiaries must not continue to lead to a loss of co-determination. This could be countered by ensuring that employees in subsidiaries and second-tier subsidiaries count directly towards the threshold in the Act on One-Third Employee Representation in the Supervisory Board (Drittelbeteiligungsgesetz) – as is already the case for the Co-determination Act (Mitbestimmungsgesetz).

As well as the possibility of the company being the sole organisational unit, the law already offers various flexible options for creating works council structures which reflect the specific organisational and decision-making structures of the company or group, and which ensure that the works council can always function at the level where the key decisions are taken. The main instrument for such arrangements is the collective agreement. Works agreements are permitted if there is no relevant provision in a collective agreement and no other collective agreement applies. This is a suitable approach, as further scope for agreements which create staff representation structures across company boundaries would lead to a disconnect between co-determination and the actual company in question.

The Federal Ministry of Labour and Social Affairs believes that, in practice, the shaping of the term “company” by court decisions and the broad scope in the Works Constitution Act for agreement-based solutions are more helpful than a formal definition of the term “company”, which would be at risk of being rendered outdated by new developments a day later. These measures mean it will remain possible in future to react quickly and effectively to developments which cannot be foreseen by legislators. The Federal Ministry of Labour and Social Affairs therefore sees no need for regulatory action regarding the possibilities for reorganising company structures via works agreements, and employers and works councils should be given greater leeway in the delineation of their company.

Another issue discussed in close connection with the concept of the “company” is eliminating qualitative disparities in co-determination in relation to core and peripheral workforces. This discussion is taking place against the background of scenarios in which, due to new possibilities of digitalisation and the subsequent outsourcing of work processes from what was previously the...
company’s core, greater use is made of flexible ways of purchasing labour, with the risk of an erosion of the foundation for institutional co-determination (→ Chapter 2.6).

It must be borne in mind that the “company” concept determines the organisational unit in which works councils are set up and exercise their participatory rights. In this framework, the works council is entitled, as the employer’s counterpart, to place limits on the employer’s right to issue instructions to employees. “Peripheral workforces” are not a homogenous group, and so disparities exist with regard to the employer’s right to issue instructions to them. For example, temporary agency workers are subject to the instructions of the employer in the organisation to which they are assigned, and so works councils have corresponding participatory rights. Accordingly, the bill to combat misuse of temporary agency work and contracts for work and services also clarifies that, in principle, temporary agency workers count towards the thresholds for staff representation.

The situation is different in the case of contract workers who are active on-site. The employer of the organisation where they are working has no right to issue instructions to them, and so there is no basis for the works council to have co-determination rights. For example, an employer cannot instruct the contract workers on-site at the organisation in question to comply with the working times set out in a works agreement.

However, beyond the question of the employer’s power to issue instructions, the digital transformation of the economy and the potential for a future increase in the role of self-employed or employee-like workers in the production of goods and services are also raising new questions about these workers’ need for protection and consideration in the staff representation system. In some cases, this is leading to calls for the scope of application of the Works Constitution Act to be widened to include all economically dependent persons or persons in need of social protection who are involved in the pursuit of the company’s work-related purpose (→ Chapter 4.7).

189 See, for example, Conference of the Labour and Social Affairs Ministers of the Länder (ASMK), Conference of Deputy Ministers (2016).

--- » Co-determination is at risk of losing all meaning in the case of cloud-based IT systems, if applications are no longer managed by the company itself but by third parties, in international corporate groups where there is no authorised negotiating partner on the employer’s side or the partner does not possess sufficient powers at national level, if works councils are no longer responsible for the people working in the company because the basis for staff representation is fragmented by growing peripheral workforces, or if the company as the basis for works council rights is at risk of eroding. «

Hans Böckler Foundation

--- » The rights of precarious workers must be brought into line with those of the core workforce. This applies to collective agreements and to co-determination. «

DB Dienstleistungen GmbH – Divisional Works Council
4.7 SELF-EMPLOYMENT: FOSTERING FREEDOM AND SOCIAL PROTECTION

--- » The German economy will benefit more and more from solo self-employed individuals. Starting a business must therefore be an attractive proposition. This is achieved by financing and capitalisation models which do not require an undertaking’s success to be 100 per cent guaranteed before it has even begun. An economy which thrives on the spirit of invention and innovation must be able to allow failures. « Alliance of German Designers (AGD)

--- » Digitalisation and interconnectedness are fueling the trend towards self-employment. These self-employed workers often have several sources of income and are active in several business fields, and they must urgently be taken into consideration. « 22 Apr. 2015 via arbeitenviernull.de

--- » Anyone who focuses solely on start-ups is forgetting that 80 per cent of entrepreneurs are small business owners. They are the economy’s backbone, start-ups are the drivers of innovation. « 22 Apr. 2015 via arbeitenviernull.de

Self-employed individuals, with their entrepreneurial spirit, are the backbone of the economy and essential drivers of growth, innovation and employment in Germany. Yet self-employment takes many forms: it ranges from established entrepreneurs in the high-tech sector and traditional craft businesses, to risk-taking business founders, freelancers and creatives, to casual self-employed workers. The digital transformation is widely expected to result in a rise in new forms of self-employed work. This is also likely to lead to further variety in self-employment, from app programmers in the “crowd” to “on-demand” cleaners (→ Chapter 2.2). «« By international standards, Germany has relatively low levels of business start-ups. Nonetheless, self-employment rose significantly from the 1990s to 2012. In recent years it has declined again slightly. In order to unlock the potential of small and medium-sized businesses in particular, it remains important to support self-employed individuals and business founders, to promote research and development, to facilitate cooperation with the research community, and to support innovation consulting in organisations. The federal support programmes which supplement the comprehensive services available from banks and private investors to finance start-ups and SMEs include low-interest loans, guarantees and start-up grants. «

In principle, the challenges of the world of work 4.0 discussed in previous sections apply equally to the entire labour force, including self-employed individuals and employees alike. However, the policy options which have been outlined, particularly those focusing on protection and social safeguards, primarily relate to the latter. This reflects the fact that self-employed individuals have traditionally been regarded as less in need of protection. They are therefore deliberately exempted from many labour and social laws and are generally not covered by the compulsory social security systems. This perspective instead assumes that self-employed individuals can earn a good living and make private provisions to protect themselves from social risks. «

ISSUES RAISED IN THE CONSULTATION PROCESS

Scrutinizing issues which are particularly important to self-employed individuals was a priority in the Work 4.0 dialogue. It became clear that the question of self-employed individuals’ need for social protection is arising anew today. That said, the concerns of self-employed individuals vary widely, depending on their economic and social situation. «

In discussions with representatives of self-employed workers, small business owners and business founders, a wide range of positions were put forward on matters such as provision for old age – from the desire for complete freedom from state interference, to the inclusion of self-employed individuals with low incomes in the artists’ social insurance system, to the proposal of an unconditional basic income for all citizens. Self-employed individuals with low incomes often complain that remuneration and fees are too low, making it impossible to finance an appropriate level of social protection. Many self-employed persons also drew attention to the rising overall burden of social insurance contributions in the event that compulsory old-age provision is introduced. «

--- » Self-employed people are responsible for their own social protection. « Association of German Chambers of Commerce and Industry (DIHK)

--- » Self-employed individuals can decide for themselves when, where and on what terms they want to work. « Confederation of German Employers’ Associations (BDA)

--- » This raises the question of whether the living and income situations of solo self-employed persons, and especially crowworkers, allow any real level of voluntary social protection. « German Association for Social Security Research and Policy (GVG)

--- » A pension insurance obligation for self-employed persons amounts to the economic disempowerment of responsible individuals. Disempowerment by the nanny state, you might say. « 22 Apr. 2015 via arbeitenviernull.de

--- » As a creative who tends to have an irregular income, I naturally take a very positive view of a basic income. « 22 Jan. 2016 via arbeitenviernull.de
Changes in people’s employment histories are leading to these issues being seen in a new light. “Once self-employed, always self-employed” – although this will remain true for some self-employed persons, for others the new diversity in employment histories will increasingly mean moving between dependent employment and self-employment or combining employment with self-employment on the side.

The dynamic development of self-employment (→ Chapter 2.1) has drawn growing attention to self-employed persons’ provision for old age. Only a small proportion of these individuals are subject to a statutory obligation to make provision for old age.190 The vast majority, around three million people, are not subject to this requirement.  clearfix

In this context, there are a range of uncertainties and difficulties to consider. Although some self-employed persons own significant means of production, the potential proceeds which can be obtained by selling the business upon retirement are difficult to calculate years or decades in advance.193 Furthermore, in the event of insolvency, all assets can be lost, including private investments made as provision for old age. In discontinuous employment histories with alternating periods of self-employment and dependent employment, relatively short periods of self-employment will generally not be sufficient to build up adequate personal provision for old age, especially if earnings during these periods are low. At the same time, gaps emerge in people’s contributions history in the statutory pension insurance system. Individuals who have a very low income over the long term are also unlikely to voluntarily make personal provision for old age. And finally, there are forms of work which seem difficult to categorise as employment or a self-employed activity, which results in uncertainty around whether social insurance is compulsory.192

Yet even if people are self-employed for most of their working life and make a good living, there is no guarantee that they are also making provision for old age, rather than relying on basic income support benefits later in life. Often they also underestimate their future needs. The fact is that many formerly self-employed persons are dependent on basic income support in old age. They account for a significantly higher proportion of people receiving basic income support in old age (37 per cent) than they do among senior citizens who do not receive basic income support (10 per cent). While many have a high income, there are also many formerly self-employed senior citizens with low incomes. Almost half of formerly self-employed people have a net income of under 1000 euros, while this is true of just over a third of former blue-collar or white-collar employees. On the other hand, nine per cent of self-employed people have an income of over 3000 euros in old age – the same can be said of just two per cent of former blue-collar or white-collar employees.193

Some self-employed individuals also have problems paying the contributions for their health insurance. This has led to high contribution arrears in the statutory health insurance system, which have to be paid for by the pool of insured persons. Only a few groups of freelance professionals and business owners are subject to compulsory insurance in the statutory health insurance system. All other self-employed people can voluntarily enrol in the statutory system or take out private health insurance. Everyone is required to have health insurance, however. Since 2006, a catch-all insurance obligation in the statutory health insurance system has applied. In this case, the minimum contribution to be paid by self-employed individuals is around 400 euros, depending on the choice of insurance fund.  clearfix

Self-employed persons in certain sectors are compulsorily insured by law in the statutory accident insurance system (agriculture, the health service, voluntary welfare organisations), while in other sectors people are compulsorily insured based on the statutes of the occupational accident insurance fund in question, i.e. insurance coverage exists due to a decision by the fund’s board of governors. Examples include the textile and clothing industry, the printing and paper industry, and hairdressers. In all other cases, it is possible to obtain insurance coverage on a voluntary basis. Compulsory insurance on the basis of insurance funds’ statutes offers a system-compatible means of extending accident insurance coverage to further groups in a targeted, sector-specific way.

---) As a freelancer, I would really like to live off my work and not constantly need to pay yet more taxes or disproportionately high social security contributions (e.g. to the health insurance fund).  clearfix

22 Apr 2015 via arbeitenviernull.de

190 Around 280,000 self-employed individuals are compulsorily insured in the statutory pension insurance system, and around 100,000 in the farmers’ pension scheme. In addition, an estimated 180,000 self-employed persons are members of professional retirement schemes. Around a further 420,000 are already drawing a statutory pension and/or are over 65.

191 Knuesel/Dohmen/Kuczyński 2011.

192 Zapf 2013.

193 2016 report on provision for old age (Federal Ministry of Labour and Social Affairs 2016c).
An important prerequisite for social protection is an adequate income. Small business owners with little bargaining power, especially self-employed contract workers, can often do little to counter the pressure clients place on their pay. In addition, the statutory minimum wage does not apply to them. They are at risk of ending up in a race to the bottom, which can be fuelled by the high level of price transparency on digital platforms. In some cases they are also competing against companies which offer similar services, while working with employees in jobs with compulsory social insurance coverage. Public fee scales only exist for a small number of occupations.

In terms of labour law, we see no need for legislators to take action. The existing statutory framework is sufficient to cover this new development.

A contentious debate is taking place about the pay and working conditions offered by new forms of work for which digital platforms act as intermediaries (→ Chapter 2.2). As well as platforms for highly qualified skilled workers, there are platforms which act as intermediaries for simple micro-tasks or physical services on demand. The partly overlapping, partly conflicting interests of workers and consumers regarding digital platforms were also discussed during the consultation process. The focus was on the lack of transparency regarding working and pay conditions, particularly in light of recent developments in the field of crowdworking. Further criticisms include unfair contractual conditions, such as payment only for those who win a competition, and the possibility for a piece of work to be rejected by the platform operator without any reason being given.

Whether or not platform workers are carrying out a self-employed activity can only be determined on a case-by-case basis. The key factors are the design of the legal relationship and the way in which the work is actually performed. As most platforms define the legal relationship in their terms and conditions as self-employment, it is potentially a question of uncovering pseudo self-employment. The individual cases need to be decided upon by the competent courts or relevant administrative procedures, such as the pension insurance system’s status determination procedure. In principle, it is the task of legislators to expand the coverage of social security and labour laws if existing civil-law standards are inadequate to ensure the protection of self-employed forms of work.

A controversial debate about how crowdworking should be legally classified is taking place amongst legal scholars. Most voices in the debate believe that crowdworkers are not employees in most cases, due to the lack of personal dependence, which is the constitutive characteristic of all wage and salary employment: they argue that crowd-workers are not subject to instructions when performing work and can freely choose whether or not to take on an assignment.

However, technical parameters and performance specifications can make explicit work-related instructions all but superfluous, as they have already been implicitly issued via the framework defined for the assignment. If time specifications also apply and continuous monitoring takes place, for example via screenshots or the logging of work processes, or if customers rate the services performed, the criterion of personal dependence can potentially be met after all. Personal dependence is also the essential criterion in determining whether an individual should be classified as an employee under social insurance law. Indications of personal dependence include the individual acting on instructions and being integrated into an external work organisation. It seems that the question of whether this criterion is met has to be examined on a case-by-case basis for platform-based activities and crowdworking.

SHAPING THE WAY AHEAD

Business founders and self-employed persons take personal risks, not just for themselves, but often also for the public good. They should therefore be supported. This includes the provision of qualified counselling. However, support for business start-ups is primarily a matter for economic policy. Where aspects relating to labour market and social policy come into play, they should take into account the eco-

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194 As part of the consultation process, a symposium on “Service Platforms from the Perspective of Workers and Consumers: how can we achieve socially just and consumer-friendly standards?” was held jointly by the Federal Ministry of Justice and Consumer Protection and the Federal Ministry of Labour and Social Affairs on 20 September 2016, see www.bmas.de/DE/Presse/Meldungen/2016/symposium-dienstleistungsplattformen-internet.html.

onomic realities for self-employed individuals. Labour market policy can help people to move from unemployment to self-employment. A range of instruments are available for this purpose in Books II and III of the Social Code (Sozialgesetzbuch), including the start-up grant, new business support, loans and grants for equipment, and funding for advisory services. These measures could be supplemented by a Personal Activity Account (→ Chapter 4.8).

The question of whether, in the case of pseudo self-employment, an individual actually has the status of an employee and thus enjoys the full protection of labour and social law can be clarified in individual cases by legal proceedings and administrative procedures such as the status determination procedure.

The fields of work for creatives are developing with particular speed and dynamism. In practice, this can make it difficult to make the necessary distinction between dependent employment and self-employment. As a frame of reference, the existing classification criteria lists could be updated and further developed in consultation with the relevant actors, such as the Artists’ Social Fund and the social insurance agencies.

Since 2006, business founders have had the option of voluntarily retaining unemployment insurance coverage if they have already been insured for a certain period of time. This is primarily intended to provide a social safety net for the difficult initial phase of starting a business.

In view of the problems which have emerged regarding provision for old age, it appears appropriate to require self-employed individuals to make provision for old age, as is the case for employees. In other European countries, this has long been a matter of course. The aim is to close existing gaps in coverage, reduce incentives for the crowding out of employment, and avoid basic income support benefits being claimed due to inadequate provision for old age. The appropriate way to achieve this is to include self-employed individuals in the statutory pension insurance system, as this offers the following advantages: 

- It will put an end to contribution histories in which contribution periods in the statutory pension insurance system are interrupted by periods of self-employment. Self-employed individuals will, like employees, receive a secure pension from a single provider.
- The statutory pension insurance system goes beyond simple provision for old age and encompasses benefits to facilitate participation, reduced earning capacity pensions and surviving dependants’ pensions, which are often not offered by personal and occupational pension schemes.

Including self-employed individuals in the community of solidarity of the statutory pension insurance system would give them the same rights and obligations as all other insured persons. At the same time, special regulations for some groups are appropriate, particularly in order to protect existing self-employed persons’ confidence in the decisions they have taken regarding provision for old age. The statutory pension insurance obligation should therefore apply primarily to younger people who enter self-employment after the obligation enters into force. There should also be greater scope to reduce contributions while setting up a new business and in periods with low earnings. In addition, those who are already covered by an obligatory system should be entitled to receive an exemption from the obligation of coverage by the statutory pension insurance system. This applies to farmers and freelancers who are covered by professional retirement schemes, such as lawyers.

By contrast, an old-age security scheme for self-employed individuals with low incomes modelled on the artists’ social insurance system, with contributions coming from self-employed persons themselves as well as clients and the state, does not appear to be an adequate solution.

Unnecessary bureaucracy holds entrepreneurs back. In particular, the notification and contribution procedures in the social insurance system are often felt to be complicated and time-consuming. Bureaucracy has generally been slashed in the social insurance system’s contribution payment and notification procedures in recent years, which have been adapted to allow data to be transmitted electronically. The Ministry intends to establish an electronic notification process for compulsorily or voluntarily insured self-employed persons in the future as well, using the same technology.

The introduction of an obligation to make provision for old age must go hand in hand with a review of the non-income-related minimum contributions for self-employed persons in the statutory health insurance system. The relatively high contributions burden for those who
have low incomes or are in the process of setting up a new business is one cause of the high level of contribution arrears in the statutory health insurance system in relation to this group. If all self-employed individuals are made subject to an additional obligation to make provision for old age, the contributions burden could play a part in causing financial overstretch. To improve the income situation, there have been some calls for statutory fee scales for self-employed persons. Such approaches could be problematic in terms of European law. The European Commission takes the view that they could violate the Services Directive. Remuneration regulations can also be problematic due to infringements of European competition and antitrust legislation.

The economic and social situation of certain self-employed persons can, however, also be improved by means of collective agreements: under Section 12a of the Collective Agreements Act (Tarifvertragsgesetz), it is already possible today for trade unions or professional associations which are authorised to engage in collective bargaining, for example, to conclude collective agreements for self-employed individuals, provided that these individuals are economically dependent and have a need for social protection comparable to that of an employee, and are thus considered employee-like persons. Collective agreements of this kind can, in addition to pay levels, cover issues such as entitlement to fringe benefits, benefits in the event of incapacity for work, or holiday entitlement. This enables terms and conditions of employment to be negotiated which reflect the specific nature of the sector in question. It is up to the collective bargaining parties whether and in what way they use this possibility of concluding collective agreements. As a first step, the Federal Ministry of Labour and Social Affairs will do more to inform self-employed individuals about the possibilities which collective agreements can offer them. Additionally, in the light of new business models which exist in the grey area between self-employment and employment, it is essential to closely monitor whether the concept of “employee-like persons” still provides the intended protection, whether it needs to be adjusted, or whether new instruments are needed to give workers on the borderline between employment and self-employment better means of collectively negotiating their working conditions and incomes.

At present, representative surveys in Germany offer no indication of a significant increase in self-employed activities in the platform economy. Although experts assume that there will be a rise in platform-based services in the coming years, the available data calls for a degree of caution. The Federal Ministry of Labour and Social Affairs is seeking to improve the available data on platform work. Empirical data on crowdworking and other types of platform activities undertaken as a main or secondary activity will form part of a regular reporting on structural changes in the world of work (Chapter 5). If a rise in these forms of work becomes apparent, new protection strategies would have to be developed, tailored in particular to employee-like self-employed workers.

A protective framework targeted at a specific group has been created in the past, in the form of the Home Work Act (Heimarbeitsgesetz), which provides for special regulations such as pay regulations and holiday allowances. A similar approach could be considered for platform workers or certain types of crowdwork if new, precarious forms of work gain a foothold in the German labour market due to an expanding platform economy.

With regard to boosting good working conditions in the digital platform economy, it has been shown that the connection between good working conditions and the delivery of high-quality services should be highlighted (Chapter 4.3).

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It may be useful to carry out an empirical study of crowdworking, creating an objective foundation for debate. (Confederation of German Employers’ Associations (BDA))

196 At present, the register of collective agreements contains 44 collective agreements with provisions for employee-like persons. In 40 cases, these are “company agreements” in the radio and television sector. Just four other collective agreements are traditional collective agreements for an industry sector, in the graphic design sector (Framework and Collective Remuneration Agreement for Design) and the sector of newspaper publishers (Framework and Collective Wage Agreement). This suggests that this instrument is underused by self-employed persons and their organisations.
SUMMARY

• Supporting self-employment and start-ups is an important task for economic policy in Germany. Labour market and social policies can provide flanking support for setting up businesses.

• Solo self-employment has not risen further in recent years. Whether digitalisation will bring a new increase remains to be seen. Yet the line between employment and self-employment is blurring; this will be even truer in the digital world of work. In some cases, self-employment is a limited period in an individual’s work history, or is carried out as a secondary activity. For all persons in work, including self-employed individuals, gaps in social protection should be avoided.

• Against this background, it would be appropriate to include self-employed individuals, in principle, in the statutory pension insurance system. The associated costs must be assessed together with costs incurred in other social insurance systems, especially statutory health insurance.

• Self-employed individuals should be encouraged to jointly assert their interests via collective bargaining structures. Greater use should be made of the existing legal possibilities, such as the option to conclude collective agreements benefiting self-employed “employee-like” persons. Steps are to be taken to improve the information available about this.

• Data collection regarding crowdworking as well as the prevalence of platforms and the work carried out through them needs to be improved.

• As one-size-fits-all regulations do not meet the needs of all self-employed individuals. Therefore, legislators should determine to what extent specific types of workers are in need of protection and include them in the protection afforded by labour and social law in line with their specific situation. A conceivable option would be to regulate crowdworking in a way which is based on the tried-and-tested, long-standing regulations for home workers.

4.8 THE WELFARE STATE: FUTURE PROSPECTS AND EUROPEAN DIALOGUE

In a social market economy, a dialogue about the future of work will inevitably also look at the welfare state. The effects of digitalisation, globalisation, and demographic and social change described in Chapter 1 are not only challenges for the economy and the world of work. They also raise questions regarding the welfare state, especially the social security systems which are directly connected to dependent employment. A systematic analysis of these challenges would have been beyond the scope of the Work 4.0 dialogue. Instead, social-policy proposals have been formulated from the perspective of the world of work, primarily as a response to the impacts of digitalisation. What has emerged are the broad outlines of a vision of how to deal with fundamental challenges for the welfare state of the future.
ISSUES RAISED IN THE CONSULTATION PROCESS

What emerges from the responses to the Green Paper on Work 4.0, besides a clear, shared commitment to the social market economy, is how widely views differ on the functions of the welfare state. While some demand comprehensive protection from the uncertainties of digitalisation, others emphasise the individual’s personal responsibility and call for the welfare state to limit itself to safeguarding minimum standards. While some underline the value of their entrepreneurial or individual freedoms, others demand comprehensive, state-organised solidarity. While some refer to the primacy of negotiations between the social partners in protecting and enforcing social standards, others regard this primarily as a matter for the state. This is far from an exhaustive list of the contradictory positions. Above all else, however, this shows that the welfare state is a dynamic system in which society’s fundamental focus is debated, and that it must constantly re-establish its worth, re-adjust and re-invent itself.

Internationally, the future of the welfare state is being debated in more fundamental terms than in Germany. This is due to the view, held primarily in the Anglo-Saxon countries but also advanced in Germany, that digitalisation will result in massive job losses. Although there is no evidence of this in Germany to date (→ Chapter 2.1), the fundamental discussion sparked by this hypothesis also has implications for German social policy. For the fear that an army of “digital labourers” might give rise to a new “social question” is merging with an international debate about the risks of excessive, and thus socially and economically dysfunctional, social inequality. Digitalisation, it is feared, could exacerbate existing divisions in societies and further reinforce inequality dynamics. Key issues in this area include growing inequality in the distribution of wealth, income divergence, the loss of jobs with compulsory social insurance coverage, the rise in precarious employment, the spread of poverty and wealth, which was adopted in April 2017; see Atkinson 2016, Piketty 2013, 2015 and Stiglitz 2015 and, regarding the discussion in Germany, Fratzschener 2016 and Mau/Schönwä 2013.

The first challenge for the welfare state is securing its long-term financing. This concern is raised in many of the responses to the Green Paper. It is not a new concern, having been the crux of social-policy debates in Germany, for example about provision for old age, for many years, including in the context of demographic change. By way of solution, there are calls on the one hand for the solidarity principle to be strengthened by including broader groups in the social insurance systems, while on the other hand greater tax financing for benefits is recommended. Fiscal aspects could only be considered on the margins of the Work 4.0 dialogue, but a series of proposals to this effect, concentrating on digitalisation, are being discussed in the international debate. They offer different strategies for the taxation of the digital economy: from a taxation of digital companies which focuses on data flows, for example, to a change in the distribution or calculation of social insurance contributions to reduce the burden on labour as a factor of production, for example by using a value-added-based system to calculate employers’ contributions. Another widely discussed approach is to change ownership structures in the digital economy, with, for example, citizens becoming owners of their data and being paid for its use, or workers becoming shareholders in companies as part of an employee (equity) participation scheme. Social policy will continue to grapple with these debates for years to come.

The second challenge is ensuring that the benefits provided by the welfare state are fit for the future. One particularly influential idea in the international debate is that of an “unconditional basic income”, which has also been discussed in Germany for years and is gaining new support in the face of digitalisation. The idea of a kind of basic income can already be found in Thomas More’s Utopia, published exactly 500 years ago, in which it is seen as a way of making theft unnecessary. The whole social insurance system should be re-focused on a single, solidarity-based system. Both for pensions and health and accident insurance, everyone should pay into a single system, with additional personal forms of provision only being made by those who also want additional special benefits. Other European countries (e.g. Austria) have never moved so far away from the system of a community of solidarity.

The value of unpaid and voluntary work should, in our view, lead to higher pensions and lower taxes. Benefits relating to this, for example in statutory health, pension and unemployment insurance, should therefore be tax-financed.

To ensure that digitalisation’s opportunities benefit the whole of German industry and its workers, as well as jobs in Germany, we need a viable social partnership and a political framework which fosters innovation, avoids bureaucratic regulations and boosts entrepreneurial freedom. There is already an adequate level of social security in this country for every individual. There is no need for a further expansion. That would only result in a more bloated welfare state. For years, ver.di has been calling, together with the German Trade Union Confederation, Social Organisation Germany and other partners, for social insurance for employees to be expanded to create a comprehensive social insurance scheme covering all persons in work. We reiterate this call, as it is taking on a new urgency when it comes to providing adequate social protection for the new forms of work and employment which are potentially increasing as a result of digitalisation. The entire labour force must be included in the social insurance system. Employers and clients (as well as “intermediaries”) must bear an equal share of the costs.

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198 The links between inequality and growth – including and in particular with reference to OECD and IMF publications – are discussed in the draft of the Federal Government’s Fifth Report on Poverty and Wealth, which was adopted in April 2017; see Atkinson 2016, Piketty 2013, 2015 and Stiglitz 2015 and, regarding the discussion in Germany, Fratzschener 2016 and Mau/Schönwä 2013.
199 Bach et al. (2016).
200 Freeman 2015.
liberal-economic variant was formulated by Milton Friedman in 1962 with his concept of a “negative income tax”: he proposed that all social benefits should be replaced by a single sum paid by the state. The various supporters of a basic income hope that it would result in a lean state which would free people from their dependence on both gainful employment and social security administrations. They thus release the state from its responsibility to give individuals access to work and, in the event of unemployment, to offer them support and assistance in a spirit of solidarity.

There was no active discussion about a basic income in the Work 4.0 dialogue, in part because the Federal Ministry of Labour and Social Affairs believes there is no need, or support within society, for such a fundamental change of system. The introduction of a basic income would mean moving away from the idea of a working society and accepting the risk of a new divide between those who have work, and can therefore have a much higher income than the basic income, and those who are voluntarily or involuntarily dependent on the basic income, without entitlement to state support in their efforts to gain access to work. Rather than the ideal held by many advocates of the basic income, i.e. expanding the concept of work beyond gainful employment and creating an inclusive working society for all on the basis of a basic income, the result could be the opposite: an exclusive labour market for the privileged. Should automation and artificial intelligence result in work becoming more efficient and thus a reduction in the work available, there would still be other solutions for sharing the dividends of digitalisation: for example, higher wages for fewer, more self-determined working hours.

If any theory has proven to be robust in recent years, it is that of the path dependency of the development of the German welfare state. Rather than a change of system, the welfare state needs to be carefully evolved in a way which reflects the public’s needs. The extent to which work and the welfare state must continue to complement each other in future is visible in almost all of the policy areas discussed in this chapter, whether the focus is on securing employment opportunities, participation in work or minimum wages (→ Chapter 4.1), safeguarding employability (→ Chapter 4.2), the welfare state’s social protection for a life-phase approach to the organisation of working time (→ Chapter 4.3), securing social rights in the context of co-determination (→ Chapter 4.5), or social protection for new forms of work (→ Chapter 4.6). The welfare state and its social security systems will need to take more of a life-phase approach in future and provide better support for transitions.

One instrument which could support a work-centric social policy which is focused on individual needs is the idea of a Personal Activity Account, which would be set up for all individuals entering working life and would accompany them throughout their working lives. The idea picks up on various academic proposals and builds on the French concept of a Personal Activation Account, which is to be introduced at the start of 2017. Three main aims would be pursued via the Personal Activity Account:

Firstly, as it would be administered by a state service provider, it could help to make it easier to transfer employees’ entitlements if they change employer. Take long-term accounts, for example: the German Pension Insurance already administers the credits in long-term accounts under certain circumstances. Automatically setting up this kind of account at the start of an individual’s working life could result in long-term accounts, currently rare, becoming much more widespread, including amongst small businesses and low earners. Administration by a state service provider could also ensure that the credits are safely invested and pay interest.

Secondly, the account could empower workers to shape their employment biographies in a more autonomous manner by offering opportunities which they could use as they see fit. For example, the account could conceivably come with an initial credit, which could be used for various clearly defined purposes over the course of an individual’s working life: to fund, for example, continuing vocational education and training not paid for by employers, the process of starting a business or making the transition into self-employment, reductions in working time or sabbaticals to raise children or care for a family member, or a flexible transition into retirement.

Thirdly, the account could ensure greater social justice. It picks up on the proposal made by various economists that, given the unequal distribution of inherited assets, a “social inheritance” should be introduced: a one-off sum which the state would make available to all young people, irrespective of their social background, which could only be...
The concept of a worker’s account outlined here could be modified in many respects. For example, sub-accounts could also be established for specific purposes, with different conditions of use applying. The accounts could also be used by the social partners to reach specific agreements.

The third challenge for the welfare state can be found in European integration. Social policy is primarily organised at national level. In view of the EU’s economic and legitimacy crises, however, a recurring debate is taking place about whether the EU needs to become more tangible for EU citizens, and in particular to become “more social”, and if so, how. One example of this is the initiative launched by former EU Commissioner László Andor, who proposed that a European unemployment insurance scheme should be established. His proposal aimed to supplement the existing national social security systems with an additional transfer benefit, financed using Member States’ tax revenues, which would be paid Europe-wide. In Germany, the idea met with universal opposition: in a rare display of unity, the responses to the Green Paper on Work 4.0 rejected the suggestion of a European unemployment insurance scheme, albeit for varying reasons.

Nonetheless, in the context of the European Monetary Union’s macroeconomic stability, there is a need for instruments beyond the ECB’s monetary policy – which is uniform for all countries – even if a European unemployment insurance scheme is unlikely to be the instrument of choice. The preparation of the multi-annual financial framework for 2021 to 2027 would seem to be a suitable forum in which to discuss a reform of financing flows at European level. For the sake of the future of European integration, the EU must win back trust and demonstrate and use its ability to deliver on key issues: Community solutions are needed in economic, security and defence policy. In addition, a social agenda is needed which places social cohesion centre stage and tackles the causes of poverty-driven migration within Europe.

The question of what “Gute Arbeit” looks like in the digital world should be discussed not just at national level but at European level as well. The EU’s Digital Agenda considers the issue primarily with regard to initial and continuing training, with the aim of actively securing the supply of skilled labour. However, the approach should – like the consultation process in Germany – be wider and take into consideration the various dimensions of decent digital work.

A joint approach by the Member States could initially consist of formulating minimum standards for workers which apply Europe-wide, without placing too great a burden on individual Member States. For example, this could involve European legal frameworks for setting national minimum wages, designing national basic social security systems, and establishing better minimum standards for the organisation of labour mobility within Europe. Designing these legal frameworks must be a matter for the Member States, in line with established European practice. At the same time, the legal framework for the coordination of social security systems would have to be revised to protect the Member States from unjustified social benefit claims. In addition, the Posting of Workers Directive, which has not been changed in twenty years, should be revised to protect workers posted across national borders.
The consequences of digitalisation in the field of health and safety at work could also be discussed at European level. A dialogue about Work 4.0 could take place not only in the framework of the Digital Agenda, but also in the context of the discussion about the European Commission’s proposal for the establishment of a European Pillar of Social Rights.\textsuperscript{202} With this Pillar, the European Commission wishes to respond to the challenges relating to employment and social cohesion in the EU caused by the financial and economic crisis. At the same time, the Pillar, like the consultation process Work 4.0\textsuperscript{203}, is based on the fundamental idea that the world of work will be transformed by current and future megatrends, especially the digitalisation of society and the economy. The Pillar is intended to become a stand-alone reference document containing principles on the support for well-functioning, fair labour markets and social security systems. This approach provides an opportunity to pragmatically engage in an urgently needed debate about the level at which the European Union’s social dimension should be organised. Regarding the governance impetus to be developed, it must be ensured that traditional national structures are respected, such as the collective bargaining and staff representation systems in Germany.

Many experts believe that the project of European integration is currently experiencing one of the most difficult phases in its history:\textsuperscript{203} a great deal of energy will need to be devoted to the consequences of Brexit, while at the same time it is necessary to address the eurozone crisis and its consequences, aid for millions of refugees, and security threats. Against this background, a broad consensus in society is needed, including in Germany, about what kind of Europe we want and what we are willing to do to achieve it. This also means that labour and social policy must not be discussed solely in the national framework; a shared European level must be found. Work 4.0\textsuperscript{204} can become a joint project for the future, not just in Germany but at European level as well: because it promises progress which benefits everyone.

\textbf{SUMMARY}

- The key challenge for the welfare state in the era of digitalisation is to find stable, viable solutions which are compatible with the social market economy and, at the same time, allow an adequate level of collective social protection for the population.

- An important dimension of this challenge is securing the long-term financing of the welfare state. The disparate trends in market incomes and assets, including in connection with digitalisation, will make it necessary for the tax and social security contributions system to evolve. Sufficient funding must be obtained for the welfare system to provide a socially viable level of benefits. This is the prerequisite for minimising inequality.

- A major aim in further developing the welfare state’s institutions is to stabilise employability over the life course and support transitions. The concept of a Personal Activity Account would see young workers being given an initial capital, as a form of “social inheritance”, which could be used for skills development, starting a business, or career breaks for personal reasons. It could also be managed as a long-term account into which individuals could make their own payments.

- Matters relating to the welfare state can only be meaningfully developed further if the European context is taken into account. This is especially true of the consequences resulting from digitalisation. The Work 4.0 dialogue should therefore also take place at European level – both in the framework of the EU’s Digital Agenda and as part of the discussion on establishing a European Pillar of Social Rights, which is ushering in a fundamental process of reflection on the European Union’s social dimension. Public support for the EU could be boosted by, among other things, a fundamental consensus on minimum standards of social protection, which could also reduce poverty-driven migration within Europe. A successful digital transformation which contributes both to greater prosperity and better working conditions within the EU could become a forward-looking project for the EU and its citizens which inspires a sense of community and identity.

\textsuperscript{202}European Commission 2016.

\textsuperscript{203}See Enderlein et al. 2016

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RE-IMAGINING WORK:
IDENTIFYING TRENDS, TESTING
INNOVATIONS, STRENGTHENING
THE SOCIAL PARTNERSHIP
5. RE-IMAGINING WORK: IDENTIFYING TRENDS, TESTING INNOVATIONS, STRENGTHENING SOCIAL PARTNERSHIP

The publication of this White Paper does not of course mark the end of the digital transformation, nor the debate around Work 4.0. It will continue over the coming years – true to the motto of this dialogue process: “Re-imagining work”. Some sensational predictions may end up being moderated, and new questions will be posed.

The consultation process has made clear that it would be a mistake to react hastily to early developments. However, it would be equally wrong to wait until potentially problematic changes have become established and the repercussions for the labour market have to be corrected retrospectively via social policy – potentially at a high cost. Instead, it is worth continuing along the path established by this consultation process: observing trends, seeking dialogue within society, taking a measured approach in terms of political action, and – wherever possible – pursuing the route of social compromise, with the involvement of the social partners and other labour-market stakeholders.

The trend towards a digitalised world of work will continue in the coming years. Clearer answers will emerge with respect to many current questions: has the German economy managed to hold its own in the face of international competition? Has Industry 4.0 become standard in most companies – at least in industrial value chains and networks? Have companies seen an erosion of their physical boundaries and become more “virtual”? What jobs have in fact been replaced by robots and artificial intelligence, and in what areas will human minds and hands remain essential, even in the future? Where has new work been created? Has cloud-based and crowd-based work become the reality for many?

The present transformation process will not be conflict-free. The challenges and tensions set out in this White Paper – such as what degree of work-related flexibility is desirable and necessary; the potential conflict between automation and securing employment; the repercussions of new business models, often based on Big Data, as well as new forms of work – these are shaped by diverse values and interests. If the transformation process is to lead to the greatest possible prosperity for society and its benefits be shared amongst as many individuals as possible, it will have to be continuously negotiated in many areas, and new social compromises will have to be found. This will only be possible if state action, social partnership, cooperation between employers and works councils, and the concrete reality for companies and organisations are considered holistically and function as a whole. With the aim of making the vision of decent work and quality jobs as outlined in Chapter 3 a reality, we are setting out four key principles:

Firstly: we want to be an innovative, learning society, in which we must also take new risks. Where individuals are confronted with new risks, new safeguards must be created. Not everything which is new and possible is necessarily good. But without developing further, our society would stagnate and our economy would lose its international competitiveness. Particularly with regard to the digital economy, we must find a way to combine innovation with the principles of the social market economy. There is justified scepticism about whether some business models; new, insecure forms of work; or approaches to data which have, for example, been observed in the United States are the right approach for Germany. We should focus on a German model, or better yet a European model, for a strong digital economy and labour market.

Secondly: work and the welfare state must always be considered together. In this context, the welfare state is facing the challenge of taking the entire life course of citizens into account, in particular focusing
its social security systems to a greater extent on supporting people in the transitions between different life phases; ensuring that preventative and follow-up measures are dovetailed in a useful way; and supporting the social partners, workers and companies in reaching sensible flexible working arrangements by providing a high-quality, well-connected social infrastructure. The welfare state and labour legislation will continue to guarantee fundamental social rights and statutory protection for all employees. Where appropriate, these must be expanded, for example around lifelong vocational education and training, which we have proposed here. Further, we need to examine whether and to what extent those rights and obligations which have so far only applied to salaried employees should also apply to new forms of self-employment, which require greater levels of social and legal protection. Looking to the future, it must be clarified whether, in the light of the digital economy, new approaches to financing the welfare state and public goods should be considered.

Thirdly: despite all modern developments, collective bargaining autonomy and co-determination will remain important institutions in the digital economy, enabling tailored solutions and flexible compromises to be negotiated. The state can and will leave space for negotiated solutions. Conversely, however, it is also the case that in areas where the social partners are not – or no longer – capable of solving problems alone, the state will have to step in – as with the recent introduction of the minimum wage.

Fourthly: all rules and principles, whether established by the state or via collective bargaining, must also be accepted and put into practice by companies and organisations. Corporate culture as it is lived in practice – from communication and management practices, to forms of employment, to human resources management – is the crucial factor in embedding real change. Objectives such as sovereignty over working time, good occupational health, skills development and employee participation can ultimately only be achieved if there is a workplace culture which fosters self-management and mutual support, and which respects jointly defined boundaries. Health is a precious asset and has a massive influence on quality of life, performance capacity, innovative capabilities and motivation. For this reason, physical and mental health, workers’ well-being and the resilience of the entire organisation are vital factors in competitiveness. A good corporate culture on the one hand, and investment in employee-health and ongoing education and training on the other, play a key part in the recruitment of skilled workers and ultimately in overall economic productivity.

With this White Paper on Work 4.0, we are documenting a broader debate in society and presenting initial conclusions from our dialogue, in the full knowledge that no definitive answers are yet possible. The trends remain “under observation”, and we should experiment with new solutions.

We need better data on how the world of work develops over the coming years. The Federal Ministry of Labour and Social Affairs is therefore proposing the introduction of regular new reporting on the working world (Arbeitsweltberichterstattung), with the involvement of academia and the social partners. This report should analyse the latest research, supplement and bring together existing data sources in useful ways and, where necessary, develop and apply new data sources. As a “map of the world of work”, it should provide a cross-section of how certain forms of employment, working times and issues relating to quality of work are developing in individual sectors; and which social groups are active in these forms of work.

The working world report should focus in particular on the extent to which contentious issues, such as theories of task-automation, the polarisation of work, and the transformation of how work is organised, are becoming a reality. In addition, the report should offer a longitudinal analysis of the life-course of workers, and provide information about where barriers exist: particularly around professional development opportunities, access to an adequate income, and sufficient provision for old age. This includes a differentiated analysis of standard employment relationships and “non-standard employment”, especially from the perspective of whether individual types of employment offer security and whether or not these forms of employment correspond with individual preferences and needs. We want to engage in dialogue with the academic community about whether we need new analytical categories in this area. These reports on the working world should be closely linked with the new monitoring of skilled labour referred to in Chapter 4.1. Each report could conceivably also take an in-depth look at a key issue.
As an important prerequisite for new “flexibility compromises”, we should examine further incentives and instruments with which we can support social partnership, collective bargaining coverage and the establishment of works councils. Rather than simply seeking to slow the long-standing erosion of collective bargaining coverage and employee representation in the workplace, we should be endeavouring to reverse the trend, without, of course, calling the principle of freedom of association into question. The Federal Ministry of Labour and Social Affairs has already started to design laws in such a way that they can contribute to this – for example, the law to prevent the misuse of contract- and temporary agency work, or the draft law to strengthen occupational pensions. More widely, any new laws and initiatives put forward by the Federal Government which have a bearing on the economy or the labour market, should also be examined in the context of their impact on social partnership and collective bargaining. There is no contradiction between individual direct participation, as is currently being piloted in some companies, and institutional co-determination. On the contrary: the aim is to achieve a productive mix of statutory rights of co-determination and direct opportunities for employee participation.

We want a phase of joint “learning in and from transformation” and to experiment with new strategies. In the 1970s and 1980s, the Federal Government monitored and responded to the changes taking place, especially in industrial production, with its “Humanisation of the Working World” programme. This was followed by further programmes, including today’s “Future of Work” research programme run by the Federal Ministry of Education and Research. Additional research and transfer projects are needed with regard to work in Industry 4.0, but also more widely. Work in the trade- and service-sectors, new digital business models and self-employed forms of work must also be included.

The changing needs of workers must also be taken into consideration. Market and technological innovations must go hand in hand with social innovation. One vital aspect of this is putting workable and effective solutions into practice on the ground, within businesses.

We need a new government-wide innovation, research and transfer strategy “Work 4.0”. The Federal Government’s existing research funding and transfer capabilities should therefore be coordinated and expanded if necessary. In order to disseminate knowledge and resources to organisations, regional innovation and advice centres should be funded to inform and advise businesses, works and staff councils about technological and social innovations.

In consultation with the social partners, we should agree on topics to be piloted – what we here have called “experimental spaces” – with the aim of implementing these across sectors and in organisations with academic support. The results should also be discussed jointly with the Federal Government, the social partners, academia and the Länder. Such experimental spaces could, for example, look at:

- Changes in the law or derogation clauses, for example in relation to flexibility in working time and location, and an examination of their effects (→ Chapter 4.2);
- Pilot projects for strategic public funding, for example a nationwide pilot project for offering further digital qualifications (→ Chapter 4.1) or a regional trial of a ‘household services account’ (→ Chapter 4.3);
- The interaction between human beings, new technology and new organisational and participatory strategies in organisations, especially around innovative approaches to improving working conditions (→ Chapter 4.4) and boosting employee participation (→ Chapter 4.6);
- New business models and organisational forms reflecting the principles of decent work, such as non-profit platforms which seek to promote and spread the services of the sharing economy in the form of cooperative or social investment projects (→ Chapter 4.3).

The institutional lead for driving these experimental spaces and for the transfer of innovation is the existing New Quality of Work Initiative, organised around a system of social partnership.
We need an intensive debate in order to reach a consensus in society on the way forward for the welfare state and its social security systems. To this end, there is a need for an open culture of political debate, social-policy research, and suitable forums and formats within which policy-makers, the social partners, academics and civil society can find answers to the three main questions regarding the future of the welfare state:

- How can the long-term funding of the welfare state and its social insurance systems be secured even amidst the digital transformation of the economy?
- How can a welfare state which takes an overarching life-course approach be organised, what requirements must it meet, and how must the social security systems be modified with this in mind? What role could a Personal Worker’s Account play in this context?
- What could a vision of a social Europe look like which maintains national competences for existing social security systems, but at the same time taps into the potential for common European solutions which are tangible for citizens?

We are confident, in light of the broad and serious discussion which has taken place in the framework of the Work 4.0 dialogue, that these vital debates can make a real difference on the ground.
Algorithm
An algorithm is a procedure for solving a mathematical problem. Implementing algorithms in program code can enable computers to calculate solutions to certain problems, for example in the context of processing Big Data to produce Smart Data.

Artificial intelligence
Artificial intelligence is a subset of computer science. It seeks to develop programs and machines which, in certain subfields (e.g. images and speech recognition), have abilities which are associated with human intelligence. These abilities are based on ‘machine learning’, among other things. Programs and machines learn from the examples they are given and derive general rules from large quantities of unsorted data.

Assistance/tutoring systems
Digital assistance or tutoring systems give users additional situation-specific information about a process or a product – via displays, mobile devices such as tablets and smartphones, or data glasses – and can be used to provide instructions, technical support or continuing training in the working process. Intelligent assistance systems “learn” from past interactions and derive general rules from large volumes of data, which can be systematically analysed due to technical advances in terms of processors and sensor technology, but also in terms of analysis methods (“Smart Data”).

Boundaries between work and private life
The use of modern information and communication technologies is breaking down the boundaries between work and private life, with a new openness replacing the structures previously imposed by the company in terms of location, time and organisation, in the form of fixed working hours and workplaces and the staff’s long-term attachment to the company.

Cloud technologies
Cloud technologies make it possible to access centrally stored data relating to a process from any location via the internet, and to work with this data, including by using supplied processing and analysis software.

Co-determination
Germany’s co-determination laws ensure that workers have a say both in working conditions and in business planning and decision-making. The two levels of institutional co-determination are the workplace, as the unit for the pursuit of work-related objectives, and the company, as the organis-sional entity with legal capacity for the pursuit of business or non-material objectives. Co-determination and participation at the workplace level refer primarily to the works council’s influence on all matters affecting workers directly in the workplace. The participatory rights are varied and include, in particular, social, human resources and business matters, such as the introduction of short-time work or overtime, the establishment of pay principles or piecework and premium bonuses, the introduction of new technical systems or work processes, and the development of social compensation plans in the event of the planned closure of a workplace or other substantial changes at the workplace level. Employees’ interests are represented by the works council. Participatory rights at company level concern business planning and decision-making. Corporate co-determination takes place in companies’ supervisory boards.

Collective bargaining coverage
Under Section 3 of the Collective Agreements Act (Tarifvertragsgesetz), the members of the parties to a collective agreement (trade unions, employers’ associations) are bound by that collective agreement. Employers which have con- cluded a collective agreement directly (as a party) are also bound by it. Parties remain bound by the agreement until it ceases to be in force (in other words, employers continue to be bound by it even if they leave the employers’ association, and it retains binding until it expires or is termi-nated, for example). “Collective bargaining coverage” generally means the proportion of employees whose employers are bound by a collective agreement, out of all employees who fall within the scope of the collective agreement in question.

Crowdworking
Crowdworking involves work, usually broken down into smaller tasks, being assigned to crowdworkers via digital platforms. Work can be assigned either to a company’s own employees (internal crowdworking) or to third parties (external crowdworking), who are often solo self-employed persons working for many customers worldwide.

Cyber-physical systems
These are systems consisting of interconnected devices, machines and movable objects, which are controlled using IT and continuous data exchange. Devices and objects are equipped with sensors which constantly produce data about their status, location, process progress and user behaviour. These interconnected systems enable automated and autonomous planning and management of manufacturing and logistics processes.

Cyber security
Cyber security deals with all aspects of ICT security in cyberspace as a whole. This encompasses all connected information technology and includes all communication, applications, processes and processed information based on it.

Data minimisation
The principle of data reduction and data minimisation enshrined in Section 3a of the Federal Data Protection Act (Bundesdatenschutzgesetz) stipulates that efforts must be made from the outset, in the development, selection and design of specific data processing processes, to ensure that no personal data, or as little as possible, is processed.

Democratic participation
The terms “democratic participation” or the “democratic enterprise” refer to staff involvement which goes beyond co-determination, such as their involvement in strategic developments or the organisation of work.

Design thinking
Design thinking is an approach to team-based creative problem-solving which is characterised by a strong focus on the needs of future users of the solution to be developed; it is an iterative and highly interdisci-plinary approach. The term comes from the fact that this approach is based on the meth- ods used by (industrial) designers.

Digital literacy
Digital literacy refers to the knowledge and skills required in the use of new technical devices and the associated information and communication networks.

Digital transformation
The digital transformation is the sum of the changes which may result from rapid and widespread adoption of new information and communication technologies in the economy and in society. They all individual- ly, and especially in combination, have the potential to transform the way in which we work and do business.

Employability
According to the Federal Institute for Occupational Safety and Health, employability is generally understood as the ability to par-ticipate in working life. Individual employa- bility depends on the requirements of the working world, on the one hand, and the in-dividual’s personal, specialist, social and methodological skills, personal health and ability to work, on the other.

Employee data protection
Legal provisions dealing with the collection, processing and use of employees’ personal data in the context of their employment are summed up by the term “employee data protection”.

Employment insurance
The term “employment insurance” means a fundamental strengthening of the preventive focus of unemployment insurance. The core idea is to provide a safety net not only for the income risks in the event that an individ- ual becomes unemployed, but also for in- come and employment risks connected with work-related transitions and career breaks over the life course, while at the same time opening up opportunities for fresh starts and professional advancement. Key elements of employment insurance include a lifelong ad-visory service, the establishment of a legal entitlement to continuing vocational educa-tion and training, and a working time policy which supports transitions and periods of skills development.

End of work
For over a century, people have been pre-dicting the end of work due to productivity gains from technological advances. While entire sectors and occupations have some-times vanished, new business models and occupational profiles emerged at the same time. It is therefore more a question of changes and shifts in the labour market.

European General Data Protection Regulation
The General Data Protection Regulation adopted by the European Parliament on 14 April 2016 after several years of negotia-tions will apply from 25 May 2018, replac-ing the EU Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data, which dates from 1995. The new Regulation aims to harmonise data protection standards and rules in Europe. It applies directly in all Member States, i.e. without further national implementing acts being required. National legislators have until 25 May 2018 to align existing national provisions with the Regulation. With regard to employee data protection, it contains an “opening clause” which allows the Member States to introduce provisions in specific areas.

Experimental spaces
Experimental spaces are an instrument to promote innovative and tailored solutions.
for workers and companies which can win support from all sides, based on agreements between the social partners. In experimental spaces, the social partners can try out approaches to contentious issues relating to the organisation of work in practice for a limited period of time, with an open mind as to the outcome and with academic evaluation of the results. These approaches can take place within the statutory framework. However, legal changes (“opening clauses”) for a fixed period of time may also be necessary. Experimental spaces can be used to try out new working time models, approaches to how people interact with new technology and new organisational and participatory strategies in organisations, and new business models and organisational forms, for example.

**Family working time model**

The family working-time model is designed to allow couples to share work and family commitments in a spirit of partnership. Both engage in paid employment with a substantial number of weekly working hours (e.g. around 80–90 per cent of a full-time position) and share family commitments. In this context, different models are also being discussed for a public wage replacement benefit, which would provide incentives for both parents, as well as single parents, to engage in paid employment within a specific weekly working time corridor.

**Generation Y**

Generation Y refers to the demographic cohort born between 1985 and 2000. Members of Generation Y are believed to place much more value than older generations on the meaningfulness of work, especially in the 1970s and 1980s – to designing working conditions at the workplace level which were initiated or supported by the state, trade unions and the academic community, particularly in the framework of the “Humanisation of Work” programme (1974–1989) launched by former Federal Research Minister Hans Mattthäus. The New Quality of Work Initiative is continuing this tradition.

**Industry 4.0**

Industry 4.0 describes a revolution in the manufacturing sector. At the heart of Industry 4.0 is a highly automated and interconnected industrial production and logistics chain. Virtual and real processes merge on the basis of what are known as cyber-physical systems. This permits highly efficient and flexible production, with customer wishes being taken into account in real time, and allows a large number of product variations to be produced.

**Green Paper**

A Green Paper is a (normally in-depth) discussion paper on a specific topic or group of topics which is intended to launch a public and academic discussion. A Green Paper summarises information, defines problems, raises questions, and sets out alternative courses of action for debate. A Green Paper is often followed by a White Paper outlining official measures and proposals – as an answer, so to speak, to the questions raised in the Green Paper. The Federal Ministry of Labour and Social Affairs published the Green Paper on Work 4.0 in April 2015, launching a broad process of dialogue and discussion on the future of work.

**Humaniisation of work**

This term means that the world of work should, as far as possible, be adapted to the worker. It encompasses all measures intended to enhance work content and working conditions. Humanising the world of work was the aim of various approaches – especially in the 1970s and 1980s – to designing working conditions at the workplace level which were initiated or supported by the state, trade unions and the academic community, particularly in the framework of the “Humanisation of Work” programme (1974–1989) launched by former Federal Research Minister Hans Mattthäus. The New Quality of Work Initiative is continuing this tradition.

**Life-phase approach**

A life-phase approach to working time enables employees to reduce their hours in certain life phases, e.g. when starting a family or undertaking continuing vocational education or training, so they can better balance the various demands on their time.

**Long-term accounts**

Long-term accounts – referred to in the law as “credits” – enable employees to “save up” portions of their pay or time worked in order to later take time off work for longer, socially insured periods. Credits can be used flexibly to allow workers to take time off for purposes defined in legislation, such as care leave or parental leave, or for purposes agreed with the employer – e.g. continuing vocational education and training, a sabbatical or the transition into retirement. They thus enable individuals to shape their own working lives. The legal provisions permit a wide range of options. The specifics can be agreed by employees and employers.

**Informational privacy**

In German federal law, the right to informational privacy is the right for individuals to control, in principle, the disclosure and use of their personal data.

**Internet of Things**

Modern information technology makes it possible for almost any object, whether ordinary household items or machines in factories, to be equipped with ubiquitous computing power, controlled via software, and connected with the rest of the world and each other via the internet.

**Knowledge society**

In a knowledge society, knowledge and its organisation are the foundation of society and a vital economic resource which determines the competitiveness of economies to a large degree. Work increasingly takes the form of knowledge work and mental tasks. Access to and sharing in knowledge via education is a central social issue in this context.

**Mobile working**

Mobile working refers to work outside the workplace. It includes working from home (telework, alternating telework), working at customer locations (e.g. sales or services), working on the go (e.g. in planes and hotel rooms) and working during business trips (e.g. trade fairs, conferences).

**Necessity (data protection)**

The collection, processing and use of personal data is only necessary if the task in question cannot or cannot fully be carried out without the data in question. This criterion is also met if the task could otherwise only be carried out with disproportionate difficulty, unacceptable effort or a delay.

**New Quality of Work Initiative (INQA)**

The New Quality of Work Initiative is a joint initiative by the Federation, the Länder, the social partners, chambers, the Federal Employment Agency, academia and the business community, which advocates an employee-focused corporate culture and develops approaches to the organisation of work which have a positive influence on motivation, health and innovation, going beyond the legal minimum standards. It offers advisory and information services, opportunities for dialogue, and a programme to support new practice-oriented services for workers and companies.

**Proportionality (data protection)**

The principle of proportionality means that personal data must not be processed or used any longer than required by the specific permissible purpose for which it was collected.

**Prosumer**

The terms “prosumer” and “consumption” describe the phenomenon of consumers being directly involved in production processes via digital media.

**Pseudo self-employment**

Pseudo or sham self-employment exists when contracting parties describe a legal relationship as self-employment, even though the actual design and conduct of the relationship constitutes wage and salary employment, in legal terms.

**Purpose limitation (data protection)**

The purpose limitation requirement in the context of data protection is intended to ensure that data is only processed for the purpose for which it was collected. The purpose is determined by the specific task for which the data was collected. Data may only be processed for a reason other than the original purpose on a statutory basis or with the consent of the individual concerned.

**Scrum**

Scrum is an approach to managing team projects which emerged in the IT industry (software development) in the 1990s and is increasingly also applied to project development in other sectors. Scrum is characterised by self-organising project teams and regular reviews of interim results, potentially followed by dynamic adjustments to process planning.
Sharing economy
The basic idea of the sharing economy is for resources which are not constantly used by a single person to be temporarily used by others, with online digital platforms generally acting as intermediaries. The term is closely linked to that of “collaborative consumption”. The European Commission, for example, refers to the “collaborative economy” in the context of the sharing economy, and uses this term for both non-profit and for-profit models. In fact, there are many arguments in support of reserving the term “sharing” for non-profit examples.

Skilled workers
Individuals who have completed a vocational training programme lasting a minimum of two years are considered skilled workers. These are people who have completed an apprenticeship or hold a technical college certificate, a degree from a university or university of applied sciences, or an equivalent qualification.

Smart Data
The data generated by billions of devices, machines and systems in the Internet of Things (Big Data) can be analysed, linked and interpreted with the aid of intelligent software. Data processed in this way is called “Smart Data”, and forms the basis for the development of smart services.

Smart Services
Increasingly, the line between service providers and product manufacturers is disappearing. Smart services are linked to the sale of a product (or in some cases render its sale superfluous, for example in leasing/usage models) and offer complimentary services related to the product, especially services based on analysis of usage data (e.g. intelligent predictive maintenance of machines).

Social market economy
This term describes an economic system which combines free participation for all in an economy based on competition with social equity and socially compatible progress in society.

Solo self-employed persons
Self-employed individuals who do not employ any staff are generally known as solo self-employed persons.

Standard employment relationship
The Federal Statistical Office defines a standard employment relationship as a permanent employment relationship in which the individual works full-time or part-time (at least 21 hours per week). In addition, individuals in a standard employment relationship work directly in the company with which they have a contract of employment. This is not the case for temporary workers, who are assigned by their employer – the temporary agency – to other companies.

Time sovereignty
In general, time sovereignty means that an individual has control over how to use his or her own time. In the narrower sense, it refers to workers being able to determine the length and scheduling of their working time.

Transaction costs
Transaction costs are costs which, rather than being incurred in the production of goods or services, arise in the use of market processes to exchange them: transaction costs, the costs of contract initiation, conclusion and implementation, transportation costs, etc. An essay by Ronald Coase, who received the Nobel Prize in economics, advanced the idea that it is efficient for work or production processes to be carried out within a company provided that the costs of obtaining a good or service via the market, including the transaction costs involved, are higher than the internal costs (taking into consideration transaction costs within the company).

Transparency requirement (data protection)
Every application which can be used online must inform users about the processing of their personal data and about the data controller. Users can only exercise their individual rights if they learn what personal data is being collected and for what purposes, what the data processing structure looks like, how the data is processed, and who the data controller is.

Trust-based working time
Trust-based working time is a model for organising work in which employees carry out their duties autonomously within an agreed period of time. This system does not involve formal time and attendance recording in the workplace, or attendance monitoring by supervisors. Employees can set their own hours and often also choose their working location. The work to be performed is usually managed via target agreements and a team- or project-based approach to organising work. However, the employer continues to have a responsibility to ensure compliance with the working time provisions in the law and in collective agreements.

Value-added-based system
The financing of Germany’s social security systems is primarily linked to labour, with employers’ social security contributions being calculated on the basis of gross wages. In a value-added-based system, employers’ social security contributions are calculated on the basis of the company’s value added.

Work 4.0
The term “Work 4.0” picks up on the current discussion about the fourth industrial revolution (Industry 4.0), but puts forms of work and employment relationships centre stage – not just in the industrial sector, but in the entire world of work. “Work 1.0” refers to the birth of the industrial society in the late 18th century and the first workers’ organisations. “Work 2.0” was the beginning of mass production and the birth of the welfare state in the late 19th century. Industrialisation led to new social problems; growing pressure from organised labour was an important factor in the introduction of the first forms of social insurance in the German Empire. “Work 3.0” covers the period in which the welfare state and workers’ rights were consolidated on the basis of the social market economy. Employers and employees negotiated with each other on equal footing, as social partners. The need for representation of common interests was unquestioned in companies and among workers. Later, some social rights were revoked, partly as a result of growing competitive pressures and the opening of national markets. “Work 4.0” will be more interconnected, digital and flexible. It remains to be seen exactly what the future world of work will look like.

Working time choice
The term “working time choice” refers to various approaches proposed in the public debate. These range from the Working Time Choice Act proposed by the German Women Lawyers Association, to the introduction of working time corridors, to the use of “working time choice” as an overarching term for models allowing flexibility in working time and location, such as flexitime and long-term accounts, alternating telework or trust-based working time. The Federal Ministry of Labour and Social Affairs understands “working time choice” as referring to entitlements, enshrined either at the workplace level, in collective agreements or as individual rights, for employees to have a say in the length and scheduling of their working time and in the choice of their working location, on the basis of negotiated flexibility. Working time choice is thus a guiding principle for a range of measures which aim to allow working time to be tailored to better reflect employees’ individual needs.

Work intensification
Work intensification describes an increase in the work which is, or has to be, carried out in a specific period of time. It can be caused by a rise in time and performance pressure due to factors such as staff shortages, rationalisation, phases of high workload in the company, or changed workflows. Work intensification does not necessarily lead to an increase in labour productivity.


Enderlein, Henrik; Letta, Enrico; Asmussen, Jörg; Boone, Laurence; De Geus, Aart; Lam, Pascual; Maystadt, Philippe; Rodrigues, Maria João; Tumpel-Gugerell, Gertrude; Vitorino, António (2016): Repair and Prepare: Der Euro und Wachstum nach dem Brexit, Bonn/Berlin.


RESPONSES TO THE GREEN PAPER ON WORK 4.0

More than 50 responses to the Green Paper on Work 4.0 were submitted by associations, public institutions and private individuals. They are available online at www.arbeitenviernull.de.

- Allianz deutscher Designer (AGD) – Alliance of German Designers
- Allianz SE – Works Council
- Arbeitgeberverband der Versicherungsunternehmen in Deutschland (AVU) – Employers’ Association of Insurance Companies in Germany
- Arbeitgeberverband Gesamtmetall e.V. – Federation of German Employers’ Associations in the Metal and Electrical Engineering Industries
- Arbeitnehmerkammer Bremen – Bremen Chamber of Labour
- Arbeits- und Sozialministerkonferenz (ASMK) – Conference of the Labour and Social Affairs Ministers of the Länder
- Arbeitsgemeinschaft der Personalräte der obersten Bundesbehörden – Association of Staff Councils of the Supreme Federal Authorities
- Bundesagentur für Arbeit (BA) – Federal Employment Agency
- Bundesarbeitsverband Chemie e.V. (BACV) – Federation of Chemical Employers’ Associations
- Bundesärztekammer – German Medical Association
- Bundesverband der Arbeitgeber in Unternehmen e.V. (BVAU) – Federal Association of Labour Law Experts in Businesses
- Bundesverband der Deutschen Industrie e.V. (BDI) – Federation of German Industries
- Bundesverband der Freien Berufe e.V. (FBV) – Federal Association of Liberal Professions
- Bundesverband der Personalmanager (BPM) – Federal Association of Human Resources Managers
- Bundesverband E-Commerce und Versandhandel Deutschland e.V. (bevh) – German E-Commerce and Distance Selling Trade Association
- Bundesverband Informationswirtschaft, Telekommunikation und neue Medien e.V. (Bitkom) – German Association for Information Technology, Telecommunications and New Media
- Bundesverband mittelständische Wirtschaft, Unternehmerverband Deutschlands e.V. (BVMW) – German Confederation of Small and Medium Sized Enterprises
- Bundesvereinigung der Deutschen Arbeitgeberverbände (BDA) – Confederation of German Employers’ Associations
- Daimler AG
- DB Dienstleistungen GmbH – Divisional Works Council (DB)
- dbb Beamtenbund und Tarifunion (dbb) – German Civil Service Federation
- Deutsche Gesellschaft für Arbeitsmedizin und Umweltmedizin e.V. (DGAMU) – German Society for Occupational and Environmental Medicine
- Deutsche Gesetzliche Unfallversicherung (DGUV) – German Statutory Accident Insurance
- Deutscher Gewerkschaftsbund (DGB) – German Trade Union Confederation
- Deutscher Industrie- und Handelskammertag e.V. (DHIK) – Association of German Chambers of Commerce and Industry
- Deutscher Landkreistag – Association of German Counties
- Deutscher Städtetag – Association of German Cities
- Die Führungskräfte e.V. (dFK) – German Confederation of Managers
- Die jungen Unternehmer von Die Fami- lienunternehmer e.V. – The Young Entrepreneurs
- Die Linke – The Left Party, response submitted by the Members of the Bundestag Klaus Ernst, Sabine Zimmermann, Matthias W. Birkwald, Herbert Behrens, Jutta Krellmann, Susanna Karawanskij, Horald Weinberg, Azize Tank
- Eisenbahn- und Verkehrsverwirtschaft (EVV) – Rail and Transport Union
- Evangelische Kirche in Deutschland (EKD) – Evangelical Church in Germany
- Gesellschaft für Versicherungswissen- schaft und -gestaltung e.V. (GVG) – German Association for Social Security Research and Policy
- Gewerkschaft der Sozialversicherung – Frauenvertretung (Gds) – Social Insurance System Trade Union – Women’s Representation
- Gewerkschaft Nahrung-Genuss-Gast- stätten (NGG) – Union of Workers in the Food, Beverages and Tobacco Industry and in the Hotel and Catering Trade
- Handelsverband Deutschland e.V. (HDE) – German Retail Federation
- Hans-Böckler-Stiftung (HBS) – Hans Böckler Foundation
- Hasso-Plattner-Institut für Software- systemtechnik GmbH (HPI) – Hasso Plattner Institute for Software Systems Engineering
- Industriegewerkschaft Bergbau, Chemie, Energie (IG BCE) – Industrial Mining, Chemical and Energy Union
- Internet & Gesellschaft Collaboratory e.V. (CoLab) – Internet & Society Collaboratory
- Kommisariat der deutschen Bischofe – German Bishops’ Office
- Marburger Bund, Verband der ange- stellten und beamteten Ärztinnen und Ärzte Deutschlands e.V. – Marburg Federation of Doctors
- Katja Mast, Member of the Bundestag, SPD parliamentary group in the Bundestag
- Karawanskij, Harald Weinberg, Azize Behrens, Jutta Krellmann, Susanna Karawanskij, Horald Weinberg, Azize Tank
- Karawanskij, Harald Weinberg, Azize Behrens, Jutta Krellmann, Susanna Karawanskij, Horald Weinberg, Azize Tank
- Robert Bosch GmbH
- Professor Christopher M. Schlück, Institut für Arbeitswissenschaft der RWTH Aachen (IAW) – Institute of Industrial Engineering and Ergonomics at RWTH Aachen University
- Sozialverband Deutschland e.V. (SoVD) – Social Organisation Germany
- Verband Deutscher Maschinen- und Anlagenbau e.V. (VDMA) – German Engineering Federation
- Vereinigung der Bayerischen Wirtschaft e.V. (vbw) – Bavarian Industry Association
- erlebe Dienstleistungsgewerkschaft (ver.di) – United Services Trade Union
- Zentralverband des Deutschen Hand- werks e.V. (ZDH) – German Confederation of Skilled Crafts
- Zukunftsforum Familie e.V. – Forum for Progressive Family Policy

* The responses submitted by political parties and parliamentary groups in the Bundestag have not been quoted in the text.
THE CONSULTATION PROCESS

The public debate on Industry 4.0 is characterised by the fact that the focus is on technological innovations, with little attention paid to labour and the impacts of technological development on the world of work.

For this reason, the Federal Ministry of Labour and Social Affairs created a framework for dialogue with the public and experts on the future of our working society: the Work 4.0 dialogue, which ran from the spring of 2015 to the end of 2016. Work 4.0 encapsulated this dialogue. Rather than looking only at work in the new production systems of Industry 4.0, the dialogue aimed to discuss and play a part in shaping our future working society’s social conditions and rules, building on a vision for quality jobs and decent work in the digital age.

FROM THE GREEN PAPER TO THE WHITE PAPER

At the launch event in April 2015, Minister Nahles presented a Green Paper on Work 4.0 which outlined the starting point and the Ministry’s aims, identified important developments, and posed many concrete questions to be discussed in the consultation process. The Green Paper subsequently flew off the press and has since reached a print run over of 27,000 copies. It has also been downloaded from the Ministry’s website 11,000 times. It has been translated into English and even Japanese so that it can form the basis for a dialogue which is not confined to Germany alone.

To give the dialogue a clear objective, the Federal Ministry of Labour and Social Affairs decided early on to present the initial outcomes in a White Paper. It reflects what was discussed in working groups, expert workshops, strategy and outcome papers, conferences, visits to companies and bilateral dialogues, and it sets out what conclusions the Ministry has drawn. A draft of the White Paper was presented at the closing conference on 29 November 2016.

DIALOGUE PARTNERS AND FORMATS

The process was an open one, and many individuals and organisations participated. The dialogue was energised by over 50 responses to the Green Paper which were submitted to the Federal Ministry of Labour and Social Affairs by the trade unions, employers associations, companies and other stakeholders. The positions and proposals they contained were discussed with the submitting organisations and other partners at a mid-term conference on 15 March 2016. A list of all responses is included in this White Paper (page 214).

A total of seven workshops were held with more than 200 experts from academia, the practitioner community and the social partners to identify areas where action is needed in relation to key issues and to evaluate options for action. Close collaborative links were developed with the permanent members of the expert group, who took part in all of the workshops and provided valuable input. A list of the experts and the subjects examined is included in this White Paper (page 224).

As part of the Work 4.0 dialogue, a separate consultation process on working time was held with the social partners, companies, civil society and academia. The aim of the working time dialogue was to discuss, in a confidential framework, the challenges and opportunities of innovative approaches to the organisation of working time, and to explore the potential for a fundamental consensus and compromises between the participating stakeholders.

Separate discussions were held with representatives of self-employed individuals, business founders and small business owners on their specific needs and matters of special importance to them.

The discussions also closely incorporated the existing discussion formats of the Federal Ministry of Labour and Social Affairs on the future of work and securing the supply of skilled labour, such as the Partnership for Skilled Professionals, the IT Summit’s “Digital Working World” platform and the Steering Committee of the New Quality of Work Initiative (INQA). The New Quality of Work Initiative has significantly revised its mission statement on the basis of the dialogue and is already incorporating impetus from Work 4.0. The IT Summit’s “Digital Working World” platform, headed jointly by the Metalworkers’ Union...
Two documents to be singled out in this context are the Labour Market Forecast for 2030 and the unprecedented study “Value Systems in the Context of Work 4.0” (Wertewelten Arbeiten 4.0), which is based on in-depth qualitative interviews with a representative sample of 1,200 people. Both of these documents highlight the immense opportunities associated with digitalisation. At the same time, they show how much variation there is in workers’ needs and their visions of ideal work, and how different and in some respects contradictory their expectations are regarding their own work and political action.

The responses to the Green Paper were published on the website both individually and by subject, and extracts were published in the “Work 4.0 workbooks” (Werkhefte). These workbooks accompanied the consultation process, offered an insight into the state of discussion on the key issues, contributed to the debate and formed an extended platform for the specialised dialogue on the future of work. The first issue of the Work 4.0 workbooks on the digitalisation of the working world was presented at the mid-term conference. The second issue came out in early September 2016. 10,000 copies of the workbooks were published. They are also available online for download.

ACCOMPANYING RESEARCH

Throughout the entire Work 4.0 dialogue, the Federal Ministry of Labour and Social Affairs has not only sought close contact with the research community, but also commissioned more than twenty research projects and individual papers in order to sharpen our awareness of the empirical starting point, areas where action is needed and the policy options. These research projects ranged from surveys of current research results on individual issues and analysis of the political debates on digitalisation in other countries, to representative business and worker surveys, special Microcensus analyses and legal opinions, to collected examples of best practice in relation to flexibility in working time and location and continuing vocational education and training. Results from these studies are presented at many points in this White Paper.
THE CONSULTATION PROCESS

LAUNCH CONFERENCE
RE-IMAGINING WORK
22 APRIL 2015

PUBLIC DIALOGUE
- The website www.arbeitenviernull.de documents the process and offers opportunities for direct participation
- 4,300 contributions on Work 4.0 via arbeitenviernull, Twitter and Facebook
- Futurale film festival: 7 documentaries
- 175 discussion events in 25 towns and cities

SPECIALISED DIALOGUE
- Advisory group composed of 18 experts from the academic and practitioner communities
- Series of 7 workshops
- Working time dialogue with the Humboldt-Viadrina Governance Platform
- Work 4.0 lab: dialogue with solo self-employed individuals
- Accompanying workbook offers an insight into the state of the discussions (2 editions, 10,000 copies printed of each edition)

STUDIES AND PAPERS
- “Value Systems in the Context of Work 4.0” study: based on in-depth interviews with a representative sample of 1,200 people
- “Labour Market Forecast for 2030” on the development of skilled labour supply and demand in Germany

GREEN PAPER WORK 4.0
PRINTED GREEN PAPERS
27,000
OVER 50 RESPONSES FROM ASSOCIATIONS, INSTITUTIONS, COMPANIES

MID-TERM CONFERENCE
MOVING TOWARDS THE WHITE PAPER
15 MARCH 2016

STUDIES AND PAPERS
- “Value Systems in the Context of Work 4.0” study: based on in-depth interviews with a representative sample of 1,200 people
- “Labour Market Forecast for 2030” on the development of skilled labour supply and demand in Germany

WHITE PAPER WORK 4.0
PRINTED GREEN PAPERS
27,000

CLOSING CONFERENCE
29 NOVEMBER 2016

AROUND 12,000 PARTICIPANTS IN EVENTS HELD BY THE FEDERAL MINISTRY OF LABOUR AND SOCIAL AFFAIRS AS PART OF THE CONSULTATION PROCESS

OVER 200 EXPERTS FROM ACADEMIA, TRADE UNIONS, ASSOCIATIONS AND THE PRACTITIONER COMMUNITY PARTICIPATED IN 7 WORKSHOPS

OVER 1,000,000 PAGE VIEWS ON THE ARBEITENVIERNULL WEBSITE

OVER 15,000 COMPLETED ONLINE TESTS FOR THE “VALUE SYSTEMS IN THE CONTEXT OF WORK 4.0” STUDY

GREEN PAPER DOWNLOADS
11,000

OVER 15,000 COMPLETED ONLINE TESTS FOR THE “VALUE SYSTEMS IN THE CONTEXT OF WORK 4.0” STUDY

11,000 GREEN PAPER DOWNLOADS

OVER 8,000 VISITORS TO THE FUTURALE FILM FESTIVAL

11,000 RESPONSES FROM ASSOCIATIONS, INSTITUTIONS, COMPANIES

Town hall meeting with Federal Minister Nahles at re:publica 2016
4 panels as part of the Xing New Work Session
15,000 completed online tests for the “Value Systems in the Context of Work 4.0” study

Symposium on Service Platforms from a Worker and Consumer Perspective, held in partnership with the Federal Ministry of Justice and Consumer Protection
Conference on Work in the Digital World – People, Organisation, Technology, held in partnership with the Federal Ministry for Economic Affairs and Energy
IT Summit “Digital Working World” platform, Partnership for Skilled Professionals, New Quality of Work Initiative (INQA)

The “Digital Working World” foresight study provides a medium- to long-term perspective on potential developments in the world of work in individual sectors
More than 20 academic papers and legal opinions on issues such as co-determination, continuing vocational education and training, crowdworking, solo self-employment, flexibility in working hours and location, etc.

OVER 15,000 VISITORS TO THE FUTURALE FILM FESTIVAL
ADVISORY GROUP

The specialised dialogue was supported by a group of advisers. The experts were drawn from both the academic and practitioner communities.

Professor Irene Bertschek
Head of the Information and Communication Technologies Research Department, Centre for European Economic Research (ZEW), Mannheim

Professor Gerhard Bosch
Institute for Work, Skills and Training (IAQ), University of Duisburg-Essen

Professor Ralph Bruder
Head of the Institute for Ergonomics (IAD), Technische Universität Darmstadt

Dr Elke Frank
Head of Group Performance Development, Deutsche Telekom AG

Astrid Granzow
Chairwoman of the Central Works Council, Atos Information Technology GmbH

Professor Armin Grunwald
Head of the Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology

Michael Guggemos
Management Spokesman, Hans Böckler Foundation

PD Dr Elke Holst
Gender Studies Research Director, German Institute for Economic Research (DIW)

Professor Kerstin Jürgens
Head of Microsociology, University of Kassel

Professor Ute Klämer
Executive Director of the Institute for Work, Skills and Training (IAQ), University of Duisburg-Essen

Dr Hans-Peter Eikös
Member of the Management Board, Cologne Institute for Economic Research (IW)

Dr Nathalie Lotzmann
Head of Global Health Management, SAP SE

Professor Joachim Müller
Director of the Institute for Employment Research (IAB)

Thomas Sattelberger
Spokesman of the Issue Ambassadors for the New Quality of Work Initiative (INQA)

Mathias Steiger
Deputy Chairman of the Works Council, Trumpf Werkzeugmaschinen GmbH + Co. KG

Professor Bernd Waas
Institute of Civil and Business Law, Goethe University Frankfurt

Dr Ulrich Walwei
Deputy Director of the Institute for Employment Research (IAB)

Professor Armin Windel
Director of Research and Development, Federal Institute for Occupational Safety and Health (BAuA)
EXPERT DIALOGUE

The consultation process on the work of the future was also conducted in the framework of a specialised dialogue, with a series of workshops involving experts from the academic and practitioner communities. Documentation on all of the workshops can be accessed at www.arbeitenviernull.de.

WORKSHOPS

WORK OR INDIVIDUAL SCHEDULES AND PRIORITIES – WHO IS IN CONTROL?
OPTIONS FOR A LIFE-PHASE APPROACH TO THE ORGANISATION OF WORKING TIME

Dr Ulrich Walwei
Institute for Employment Research (IAB): Working time realities and wishes

Dr Hartmut Seifert
WSI Senior Research Fellow, Hans Böckler Foundation: Employees’ working time needs

Dr Hans-Peter Klös
Cologne Institute for Economic Research (IW): Companies’ working time needs

PD Dr Elke Holst
German Institute for Economic Research (DIW): Working time realities and wishes from a gender perspective

Professor Ulrich Mückenberger
Research Professor of Transnational Labour Law at the University of Bremen, Chairman of the German Society for Time Policy (DGZFP): Social-policy implications of working time policy

Dr Christina Klenner
Institute of Economic and Social Research (WSI) at the Hans Böckler Foundation: Working time options over the life course — What factors in organisations influence their use?

Daniela Jauch
Gamro Dialysatoren GmbH: Best practice – Working time options in organisations

Dr Philip Wotschack
Berlin Social Science Center (WZB): Optional long-term accounts: potential, limits and policy options

Professor Heide Pfarr
Chairwoman of the Commission on Labour, Corporate and Commercial Law and Equal Opportunities of the German Women Lawyers Association (djb): Policy options for working time choice (abridged written version of the presentation)

Professor Gerhard Bosch
University of Duisburg-Essen: Parameters of a life-phase approach to the organisation of working time

Dr Susanne Steffes
Centre for European Economic Research (ZEW): Mobile and anytime, anyplace working from the perspective of employees: results of the “Quality of work and economic success” survey

Professor Antje Duchi
Beuth University of Applied Sciences, Berlin: Mobile work — health risks and opportunities — needs for action

Professor Ulrike Hellert
FOM University of Applied Sciences: Mobile and anytime, anyplace working from the perspective of SMEs

Dr Elke Frank
Microsoft: Digital technologies as facilitators of new forms of flexibility

MOBILE AND ANYTIME, ANYPLACE WORKING

Dr Suzanne Steffes
Centre for European Economic Research (ZEW): Mobile and anytime, anyplace working from the perspective of employees: results of the “Quality of work and economic success” survey

Professor Antje Duchi
Beuth University of Applied Sciences, Berlin: Mobile work — health risks and opportunities — needs for action

Professor Ulrike Hellert
FOM University of Applied Sciences: Mobile and anytime, anyplace working from the perspective of SMEs

Dr Elke Frank
Microsoft: Digital technologies as facilitators of new forms of flexibility

Frank Roth
AppSphere: Opening up options and setting guidelines, from the perspective of a small business

Dr Peter Cammerer
BMW Works Council: Opening up options and setting guidelines, from the perspective of a large company

Dr Manuela Maschke
Hans Böckler Foundation: Key fields of action in shaping mobile work by means of works agreements

Paul van Dun
Ministry of Social Affairs and Employment, the Netherlands: When possibilities become rights: the right to telework in the Netherlands

Professor Friedhelm Nachteiner
Formerly of the University of Oldenburg: Questions relating to the law on working time: what legal framework promotes healthy working when workers control their working time and location?

Professor Rüdiger Krause
University of Göttingen: Questions relating to the law on working time: setting boundaries
DIGITALISATION’S IMPACTS ON EMPLOYMENT AND FORMS OF WORK

Professor Michael Beigl
Karlsruhe Institute of Technology (KIT): What lies ahead? An overview of technological developments and their fields of application

Professor Holger Bonin
Centre for European Economic Research (ZEW): Debate about the end of work and digitalisation’s impacts on employment, occupations and skills

Professor Volker Deville
Alliance Deutschland AG: What does rising automation mean for employees of an insurance group? New skills requirements and operational approaches

Oskar Heer
Daimler AG: Working in Industry 4.0 – challenges for organisations and workers

Sebastian Kurt
scondoo GmbH: Advantages and disadvantages of new forms of work for user companies

Thomas Mendlzik
Hamburger Hafen und Logistik AG: Social partnership in an era of rising automation – example of an innovative collective agreement offering protection from rationalisation

Professor Jan Marco Leimeister
University of Kassel: New forms of work in the digital working world – fields of action and policy options

LABOUR LAW AND CO-DETERMINATION

Professor Gregor Thüring
University of Bonn: Forms of digital work and their classification under labour law

Dietmar Schern
Works Council of Audi AG: Innovative participation approaches – case study: Audi AG

Uwe Zillesen

Professor Peter Wedde
Frankfurt University of Applied Sciences: Digitalisation and employee data protection, and impetus for joint approaches to change processes in organisations in the digital working world

Professor Jan Marco Leimeister
University of Kassel: New forms of work in the digital working world – fields of action and policy options

Dr Manuela Maschke
Hans Böckler Foundation: Position on joint approaches to change processes in organisations in the digital working world

EDUCATION, SKILLS DEVELOPMENT AND CONTINUING VOCATIONAL EDUCATION AND TRAINING

Professor Reinhard Pöhlak
Berlin Social Science Center (WZB) and Freie Universität Berlin: Challenges for continuing vocational education and training in Germany (need, supply structure, uptake, potential for social mobility)

Jan Eggert
BMW Education Academy: Industry’s changed needs regarding human resources and skills

Professor Matthias Jaske
Fraunhofer Institute for Applied Information Technology (FIT): New requirements of the digital working world – computer-based possibilities for continuing vocational education and training integrated in the working process.

Alfred Lökcke
Central Works Council and Group-Level Works Council of Robert Bosch GmbH: Continuous vocational training as an instrument for in-company training of skilled workers and social mobility

Stefan Soltermann
Industrial Mining, Chemical and Energy Union (IG BCE): Anchoring of continuing vocational education and training in collective bargaining policy

Professor Eva Kocher / Professor Felix Wölti
European University Viadrina, Frankfurt (Oder) / University of Kassel: Legal design of an entitlement to continuing vocational education and training

Robert Titzbach
Federal Ministry of Labour, Social Affairs and Consumer Protection, Austria: Policy learning, taking full-time and part-time training leave in Austria as an example

Friedhelm Siepe
Federal Employment Agency: How does the Agency see its future/development potential? [Strategic focus and concrete experience gained from the pilot project on advice on continuing vocational education and training]

Robert Titelbach
Federal Ministry of Labour, Social Affairs and Consumer Protection, Austria: Policy learning, taking full-time and part-time training leave in Austria as an example

Professor Wiebke Brose
Frankfurt University of Applied Sciences: Innovative participation approaches – case study: Publicis Pixelpark, Cologne

University of Kassel: New forms of work in the digital working world – fields of action and policy options

Innovative participation approaches – example of an innovative collective agreement offering protection from rationalisation

Uwe Zillesen

Dr Reinhold Thiede
German Federal Pension Insurance (DRV Bund): Problems in designing pension insurance for (solo) self-employed individuals

Michael Quabach
German Statistical Office (DESTATIS): Digitalisation’s impacts on statutory accident insurance: status quo and challenges

SOCIAL SECURITY

Dr Verena Tobisch
Institute for Empirical Social and Economic Research (IRES), Berlin: Solo self-employed individuals in Germany and the potential of the gig economy

Professor Wiebkie Brose
University of Duisburg-Essen: Assessment of new forms of employment in terms of existing social insurance law

Melanie Fahnmy
TNS Infratest: Presentation of the results of the qualitative study “Focus group discussions”

Dr Andreas Lutz
Association of Founders and Entrepreneurs Germany (VGSE): Position of an organisation representing the interests of self-employed individuals

Dr Manuela Maschke
Hans Böckler Foundation: Position on joint approaches to change processes in organisations in the digital working world

Monika Queisser
OECD: Design of provision for old age for self-employed individuals in selected OECD countries – policy learning

Dr Reinhold Thiede
German Federal Pension Insurance (DRV Bund): Problems in designing pension insurance for (solo) self-employed individuals

Victoria Ringelb
Alliance of German Designers (AGD): Position of an organisation representing the interests of self-employed individuals
SOCIALLY COMPATIBLE CHANGE MANAGEMENT AND GOOD CORPORATE MANAGEMENT

Jan Sievers
TUI AG: Evolution of agile methods in practice in a large company

Professor Rötting
Technische Universität Berlin: Future of human-machine interaction

Dr Christian Schlögel
KUKA AG: Human-machine interaction in Industry 4.0

Per Wiek
Deutsche Bahn AG: The future of human-machine interaction in the service sector

Dr Immanuel Hermreck
Bertelsmann SE: Shaping the digital transformation from the perspective of human resources management

Birgit Isenmann und Alfred Löckle
Robert Bosch GmbH: Shaping the digital transformation at Robert Bosch GmbH

Dr Jochen Appt
German Statutory Accident Insurance (DGUV): New challenges for health and safety at work and possibilities for the organisation of work

Dr Werner Eichhorst
Institute of Labor Economics (IZA): Economic incentive systems to promote good working conditions
On 5 November 2015, the Federal Ministry of Labour and Social Affairs launched another way for members of the public to participate in the discussion about the future of work: Futurale.

The film festival, consisting of seven documentaries, toured Germany for an entire year. The films cover a wide range of different aspects of work: they show the everyday reality of work in all its facets, highlight digitalisation’s impacts on traditional occupations, and follow companies which are embarking on new paths. They show new forms of employment and innovative life plans, and offer an insight into the world of start-ups.

Following each film, regional experts engaged in discussion with the audience – and so the subject of Work 4.0 was examined from a whole range of different perspectives over the course of 175 events. More information is available at www.arbeitenviernull.de.

The films

**UNLIMITED FREEDOM – UNLIMITED REACHABILITY?**
DIGITALE NOMADEN – DEUTSCHLAND ZIEHT AUS
Director: Tim Jonischkat, Germany 2015
Digital nomads are location-independent, free-spirited individuals who are able to carry out their work anywhere in the world. The first German-language documentary on this subject takes the audience on a fascinating voyage of discovery through a new way of life and a new working world.

**ROBOTS AS THE ANSWER TO DEMOGRAPHIC CHANGE?**
IK BEN ALICE
Director: Sander Burger, The Netherlands 2015
In an ageing society, qualified professionals are in short supply in the long-term care sector, and so in future the robot carer “Alice” will step in. The documentary IK BEN ALICE, which premiered in Rotterdam, examines the question of how robots can build a relationship with people. Moving, heart-rending and ethically thoughtful.

**WILL THE FUTURE BE PRINTED?**
PRINT THE LEGEND
Directors: Luis Lopez, Clay Tweel, USA 2014
The prize-winning documentary PRINT THE LEGEND looks at the race to bring 3D printing technology to market, which Barack Obama referred to as the next technical revolution in his 2013 State of the Union Address. The filmmakers follow the entrepreneurs who are placing 3D technology at the heart of their start-up ideas, and show what this “Macintosh Moment” means to them.

**I WORK, THEREFORE I AM – IDENTITY VIA WORK?**
DEINE ARBEIT, DEIN LEBEN!
Director: Luzia Schmid, Germany 2015
DEINE ARBEIT, DEIN LEBEN! is part of a cross-media project examining what work means today in a traditional industrial heartland. And it does so as authentically and directly as possible: from the perspective of the people concerned. At the invitation of the broadcaster WDR, people recorded their day-to-day work using smartphones or video cameras. This documentary was then created from several hundred homemade videos.

**BRAVE NEW WORKING WORLD?**
HAPPINESS AT WORK
Director: Martin Meissonnier, France 2014
The economic crisis has the global labour market in its grip. The documentary HAPPINESS AT WORK gives a voice to companies which are defying the negative mood and taking innovative steps to ensure that their staff enjoy coming to work again, while at the same time generating higher profits.

**DREAMING OF COINING IT IN FROM YOUR SOFA? YOUTUBE MAKES IT POSSIBLE**
PLEASE SUBSCRIBE
Director: Dan Dobi, USA 2013
YouTube is already the world’s second biggest search engine, after Google. Every day, users click on around four billion videos; hundreds of hours of video material are uploaded every minute. PLEASE SUBSCRIBE explains the phenomenon of some of the most influential content creators who have set the standard for YouTubers.

**FROM IDEA TO START-UP – HOW LONG A ROAD?**
SILICON WADI
Director: Daniel Sivan, Yossi Bloch, Israel 2014
Israel is regarded as the start-up nation. There are more start-ups in Tel Aviv alone than in the whole of Europe. Nowhere else can match Israel for the amount of venture capital available per person. How does a high-tech nation function? SILICON WADI by Daniel Sivan and Yossi Bloch follows four young companies and their backers in Tel Aviv over two years.