

WORKERS' REPS 4.0

The Handbook



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Introduction

One of the main disruptive forces in today world is represented by new technology. Through the catch-label Industry 4.0 and its associated strategy, between 2011 and 2013, the German government prepared the ground for the digitalisation of manufacturing companies willing to keep the pace with the fourth stage of industrialisation. Following Germany, digital transformation policies have been set up over the past few years by around 2/3 of EU Member States. As a result, according to the *Digital Transformation Scoreboard 2018* (European Commission, 2018), 9 out of 10 European companies consider digital technologies (encompassing internet of things, cybersecurity, advanced robotics, big data and data analytics, additive manufacturing, artificial intelligence, cloud technologies, mobile services, etc.) as an opportunity. However, only a small percentage of them are already harnessing their full potential.

Whereas the adoption of digital technologies is proceeding, while at a slow pace in Europe, there are several estimates on their impact on the world of work. On the one side, there are studies forecasting a considerable proportion of jobs threatened by digitalisation, a polarisation of competences in labour markets, whereby a growing share of high-qualification activities is accompanied by persisting easy and non-automatable tasks, and the paradoxical combination of decentralisation and multi-functional roles with standardisation and control tasks in modern work-organisational models. On the other side, more optimistic analyses foresee the long-term employment creation resulting from digital technologies, an upgrading of qualifications and skills due to the increasing complexity



of digitised industrial work, and self-organised and highly flexible work organisation systems. Further complicating the situation are the challenges of climate change and the aging population, both requiring structural reforms in the economy and society.

In the light of such a controversial scenario, international institutions are backing a proactive and human-centred approach, with a view to preventing the exacerbation of long-standing challenges (e.g., wage and income inequality, poverty, unemployment, gender disparities, etc.) due to the pressure of new ones. After all, as the ETUC resolution (2016, 3) pointed out,

“Nobody has a crystal ball to look into the digital future and there is no such thing as technological determinism related to digitalisation”.

That is why workers’ representatives, along with other political and societal players, are now urged to take action to collectively and sustainably shape the future of work.

Where Do We Start?

Job Security

Although digital technologies are expected to bring about long-term positive employment effects, no one can question the likelihood of continuing job losses in traditional manufacturing sectors, where the decline started already in the 1970s as the demand for manufactured goods began shrinking, energy prices escalated, and Western



companies' main reactions took the form of automation and outsourcing. To mitigate this negative trend, if reversing it is unlikely, it has been argued that European manufacturing needs to aim for higher value-added activities and services, that are technology-intensive and require workers' reskilling and upskilling.

To deal with this challenge, workers' reps should ask for more transparency in information and consultation processes, that should start on due time to allow them to participate with management in decision-making on large industrial plans, encompassing the introduction of new technologies and the analysis of their related impact on work. Moreover, at the local or national cross-sectoral level, better and shared solutions are demanded to ensure smooth occupational transitions of workers made redundant as a result of structural changes.

The Employment Transition Fund for Swedish Blue-Collar Workers

In 2004, the Swedish Trade Union Confederation for blue-collar workers (Landsorganisationen i Sverige – LO) and the Confederation of Swedish Enterprise (Svenskt Näringsliv) concluded an agreement to establish support measures in case of redundancies for shortage of work. In that occasion, the Employment Transition Fund (Trygghetsfonden – TSL) was constituted as a joint body in charge of executing the agreement. TSL is one of the 10 Job Security Councils in Sweden, established by social partners and financed by employers with the aim of anticipating and managing structural changes. TSL's solutions encompass guidance to workers in the search for a new job, the start-up of a new business and the enrolment in educational paths. When needed, TSL can also provide for short vocational training courses and the validation of professional knowledge and skills to sustain people's employability. TSL's solutions apply to all workplaces facing restructuring and covered by a collective agreement with a trade union federation affiliated to LO. Today, TSL's chairman comes from the Swedish Metalworkers' Organisation (IF Metall).

Further information at <https://www.tsl.se>.



Skills Development

Although the skill upgrading of manufacturing employment is expected to intensify with the development of Industry 4.0 and



the increasing demand for designers, industrial data scientists, big data statisticians and data security analysts, there will probably be fewer jobs directly involved in the production and routine administrative activities due to the long-standing automation process. Moreover, soft and communication skills will be demanded as working in teams will be more and more frequent. Indeed, in addition to destroying some jobs and creating others, technology is supposed to transform job content profoundly. As a consequence, tackling the well-documented lack of digital skills across EU population is just one part of the solution, that needs to be complemented with the development of other technical and behavioural skills to ensure that people and technology remain interdependent.

To deal with this challenge, workers' reps should ask for workers' training programmes when a new technology is about to be introduced and periodic assessments of workers' tasks and skills to tackle their possible obsolescence. They should promote job rotation for greater versatility and expansion of workers' roles; should also contribute to the development of systems aimed at assessing and validating workers' competences in order to allow for better mobility across companies and sectors. Finally, they should cooperate with companies and educational institutions in order to plan curricula that meet future industry's needs.

The Validation and Certification System of Knowledge and Skills in the Swedish Metal Industry

'CNC Technology 2017' is a standard for validation and certification of knowledge and skills on three levels within the Swedish metal industry:

- CNC Technology Green Certificate;
- CNC Technology Blue Certificate;
- CNC Technology Black Certificate.

These three levels correspond to European Qualifications Framework (EQF) levels 4, 5 and 6. Green and Blue Certificates secure basic skills requirements; the Black Certificate secures in-depth cutting-edge expertise in specific branches. The development of the content of these certificates started in 1998 with a pilot project in the County of Gävleborg, funded by the Swedish Agency for Employment (Arbetsförmedlingen) and the firm

Lernia AB, and involving a network composed of IF Metall, local companies and universities. Within the network, the company Mapaz AB committed itself to the design of internet infrastructure to support the lifelong learning process according to ISO 9000. The development process of the validation and certification system in the metal industry continued over the years and today the company Skärteknikcentrum Sverige AB, owned by the Swedish Association for Machined Components (Svenska Skärteknikföreningen), is responsible for the development and quality assurance of the content and the accreditation of test centres. There are currently 94 test centres distributed throughout the Country and organised by universities, upper secondary schools and companies. The internet infrastructure supporting the whole process is owned and run by Mapaz AB. Private stakeholders across the sector provide funding. This system is meant to help companies recognise and get a qualified workforce. On the labour side, after the validation process, workers receive either a certificate or an individual development plan to acquire those skills and knowledge that are still missing. By gaining a certificate, workers benefit from increased mobility in the labour market. Further information at <https://sktc.se>.

The 'Individual Right to Training' for Italian Metalworkers

In Italy, in the latest renewal of the national-level collective agreement for the metalworking sector, signed in November 2016, the Italian metalworkers' organisation FIM-CISL and the other trade union federations, FIOM-CGIL and UILM-UIL, along with the employers' associations, Federmecanica and Assital, introduced an 'individual right to training' materialising in at least 24 hours in 3 years devoted to training, due to each metalworker employed in the companies covered by the agreement. If after 2 years workers have still not been involved in training paths organised by the company, they are entitled to participate in external courses and the company has to cover the related expenses up to 300 Euros.

Part-Time Work for Training Purposes in German Metalworking Companies

In the latest round of collective bargaining renewals, the German Industrial Union of Metalworkers (Industriegewerkschaft Metall – IG Metall) provided workers with the right to ask for a 'qualification interview' with their employers, where workers can express their own training needs. This inter-

view shall be preceded by a discussion on the topic between the individual worker and the works council, that generally sees the big picture and determines if further training is necessary or at least appropriate for the company. If further training is regarded as necessary, the employer is required to bear the costs and free the employee from work for the duration of the training programme; if additional training is instead considered as appropriate, the employer has to grant the employee the so-called 'educational part-time' (up to 7 years, before returning to the normal working time). This measure can be financed either via a specific training account, where the employee collects and saves overtime hours as well as the allowances paid for working on Sundays or public holidays, or sabbatical leaves provided by the employer. Conversely, if further training is simply a personal desire, the worker needs to spend her own time and money. Interestingly, moreover, after the 'qualification interview', the employer and the individual worker are expected to reach an agreement on training, which details the duration of the training process, its main characteristics (part-time or full-time), its financing and the return to normal work. This agreement shall also be submitted to the works council, that is entitled to advise workers about these issues.

Health and Safety at Work

Although robots are expected to increasingly take over hazardous jobs previously performed by workers, information technologies are likely to detect dangers more effectively, new risks can arise. For example, from the closer interaction between humans and smart technological equipment, the toxicity of materials used in 3D printing technologies and the psychological effects of the virtualisation of work and the possibility of working anytime, anywhere. Syndromes such as technostress (which is the stress deriving from altered habits of work and collaboration, due to the introduction of new technologies), occupational burn-out, 'fear of missing out' (FOMO, related to the perception that others might live wonderful experiences according to social media posts, while you do not). National and European institutions have already detected 'nomophobia'



(which is the fear of being without the mobile phone) and 'phubbing' (which is the habit of interacting with the phone rather than with human beings).

To deal with this challenge, workers' reps should insist, also with the support of OHS experts, on smart equipment and new work environments being configured with a focus on humans and their safety and comfort. Raising workers' awareness of safer behaviour and collaboration with new technologies, they should experiment with new ways to prevent psychological diseases following the virtualisation of work and the increasing interference between work and personal life.

The Joint Committees on Health and Safety in Spanish Workplaces

According to the Act No. 31/1995 and subsequent amendments, joint labour-management committees on health and safety are constituted in Spanish workplaces with at least 50 employees. These committees are entitled to participate in the definition, implementation and assessment of risk prevention measures. Notably, before the introduction of new technologies, joint committees on health and safety at work are called to analyze their future implementation from the perspective of risk prevention. This provision, introduced by law, is further detailed in company-level collective agreements.

The 'Communication Etiquette' in the Italian Company Manfrotto

In Italy, some company-level collective agreements in the metalworking sector envisage specific behavioural norms for proper use of new information and communication technologies. An example is represented by the collective agreement reached in 2018 at Manfrotto, introducing the so-called 'Communication Etiquette', that commits managers and workers to:

- selecting the proper tool (either an e-mail, a meeting or other tools) in accordance with the type, content and timing of the communication; in any case, private tools (e.g., instant messages on private phones) should be avoided;
- choosing the right timing for sending a notice, usually during working hours and possibly not in moments when the sender knows that the recipient is busy because, for instance, he/she is involved in business meetings;

- carefully identifying the recipients so as to prevent people, that are not directly concerned, from being included in the communication;
- highlighting the degree of priority and urgency of the communication so as to allow the recipients to evaluate when answering in accordance with their own organisational needs and workloads;
- identifying specific times during the day, dedicated to the reading of the e-mails, to limit interruptions during normal business hours and pay attention to the activities that are being performed;
- specifying when they are available or not and, in case of long-term absence, setting up automatic replies to e-mails which also provide the contact information of a colleague.

The 'Right to Disconnect' at BMW in Germany

The 'right to disconnect' from work has been introduced in many companies at the European level. An example can be represented by the agreement reached at BMW in Germany and come into force in 2014, stipulating that all employees are allowed to register time spent working outside the employer's premises as working time. For instance, if they want to check their e-mail at home, before going to the office, they are allowed to do so, but they have to report the time spent in the activity outside the office to the company at the end of the week. Moreover, they are encouraged to agree 'fixed times of reachability' with their supervisors and, outside the agreed work time, they have the right to switch off and not be available. These collective provisions, complemented with the company motto "Work flexibly but know how to switch off" (*Flexible arbeiten, bewusst abschalten*), are meant to contrast informal mobile work and help individuals reconcile paid work with personal life.

Processing of Employee Data

Increasing customisation and servitisation of manufacturing, as well as the pursuit of more efficiency in OHS and human resource management, can come at the price of the collection and processing of large amounts of data, including data about individual workers (e.g., work presence and absence, rate of task completion, physical information such as heart rate and blood pressure, etc.). These data can



also be used to automate and fasten decision-making processes and assessment of work performances. Serious concerns thus emerge not only about individual privacy and protection of personal data but also equality, transparency, and lawfulness of data processing, algorithmic decision-making and evaluation.

To deal with this challenge, workers' reps should deepen their knowledge on privacy regulation and data protection, possibly also thanks to the support of external experts and ask for greater involvement in decision-making processes concerning the collection and analysis of data. In this regard, the approach of 'negotiating the algorithm' is being advocated at the international level to encourage workers' representatives to bargain over the collection of data, the ways of their use and the purposes pursued. The goal of collective bargaining in this field should not merely be the preservation of workers' privacy against attempts to monitor work, but also greater worker participation in decision-making processes that are increasingly penetrated by data and their possible opaque use.

The Direct Involvement of Italian Workers in the Determination and Analysis of Data They Themselves Generate

In Nuovo Pignone, an Italian company of the group General Electric Oil & Gas, every work station is equipped with a panel where the individual worker has to insert the information related to possible malfunction. When this occurs, the system generates an alert with a work order directed to the work team which is in charge of the resolution of possible problems. It is important to underline that before the installation of this device, workers and their representatives succeeded in engaging in a dialogue with management and contributed to the definition of the specific information to be inserted in the panel. Another relevant case in this field is represented by the 2018 collective agreement signed at Partesa (a company operating in the retail sector), which envisages the installation of an application of safe driving in the smartphones provided to the personnel, with the aim of tracking and then improving driving behaviours of employees in the exercise of their duties. As stated in the agreement, feedbacks on individual driving behaviours are provided to the single workers by the app. However, only aggregated driving behaviours (of min. 10 people) shall be collected; they are then returned to the groups of drivers and analyzed in the 'safety' meetings, held in each department, with the aim to highlight the significant risks while driving a vehicle and adopt more conscious and less dangerous driving styles.

Negotiating the Introduction of Industry 4.0-Related Technologies in German Companies

In the metalworking sector in Germany, there are works agreements signed at group level and aimed at laying down guidelines for works councils at the establishment level to negotiate over the introduction of new technologies. The Bosch Rexroth agreement of 2016 represents an example, envisaging pilot phases during which works councils can assess the effect of Industry 4.0 solutions on workers (e.g., in terms of individual privacy, health and safety, job content, etc.) and propose changes. Employees themselves are involved since the beginning in the design and introduction of new technological devices and allowed to provide suggestions for a better and more sustainable integration of technologies in the workplace; they are also entitled to ask for an interview with their supervisors about the opportunities for their career development in the light of technological and organisational innovation. By and large, these agreements are not limited to restricting the collection, access, processing and storage of data, since they tackle holistically all the various issues raised by the installation of new technological equipment.

From Germany, an Example of Participated and Shared Design of Digital Production Tools

A very proactive (rather than merely protective) role played by IG Metall in the field of digital transformation regarded, from 2014 to 2016, its contribution to the design of 'APPsist', a smart assistance system used in production and aimed at supporting shop floor workers in their activities and allowing managers to flexibly use their employees for the execution of different tasks to the advantage of efficiency and quality standards. The software solution provides a context-sensitive assistance and knowledge system that can be expanded by the integration of augmented and virtual reality technologies. The development of 'APPsist' was enabled by a multi-stakeholder partnership, involving not only research centres and universities but also trade unions and employers' associations, and financed by the Federal Ministry of Economic Affairs and Energy. The involvement of IG Metall in the project permitted the union to know from the beginning, even before its application in companies, the functioning of the system, the data it needs and how they are processed.

Further information at <https://edtec.dfki.de/en/projekt/appsis/>.



Work Organisation

There is a consensus in the literature on the complementarity between lean manufacturing and Industry 4.0. By drawing on socio-technical studies, various authors sustain the idea that a lean environment (supported by a culture of continuous improvement, which makes workers not only accept changes but also actively drive changes sustainably and efficiently) is an enabler of Industry 4.0, which in turn provides the technological infrastructure (in terms of greater availability of data, interconnectivity, real-time elaboration, etc.) to potentially enhance the lean/six sigma capability of an organisation. As a consequence, flatter hierarchies, workers' active engagement and empowerment, as well as managers' efforts to collect and share workers' knowledge, are expected to grow.

To deal with this challenge and pursue a 360-degree innovation from a technological, organisational and social viewpoint, workers' reps cannot be excluded. In fact, they should have a say in and lend their knowledge to the configuration of new work environments. They should have a role, along with management, in the definition and management of continuous improvement projects, in order to make sure that workers are not simply used but do benefit from the increasing managers' reliance on their cognitive skills and expertise; in so doing, workers' reps are expected to enable concrete participation and shared decision-making starting from the operational level.

The Role of a Local Trade Union in the Promotion and Implementation of Organisational Innovation Projects in Italian Workplaces

Since 2016, a regional structure of FIM-CISL based in Brescia has promoted the development of a number of organisational innovation projects in local companies. To do so, they have relied on the expertise of a few external consultants that though have a long history of collaboration with unions and are regarded as trustworthy. The costs of consultancy have been born by companies, that sometimes have also accessed the resources of bilateral funds. The launch of these projects is usually mentioned within collective agreements, but their implementation is more carefully detailed

in actual action plans. These plans are generally articulated in different phases corresponding to the initial analysis of the business environment (e.g., via focus groups and workshops with employees as well as interviews with managers and workers' representatives): the identification of main intervention areas and critical issues and the establishment of continuous improvement groups (composed of both workers on the shop floor and supervisors); the assessment of the overall project and the possibilities for its continuation. A steering committee is usually built and composed of managers, workers' representatives, local trade unionists and external consultants; it is in charge of coordinating and monitoring the activities as well as proposing possible changes. Sometimes, training courses targeted to the overall workforce or just to the members of work groups are organised before the start of the project. Through the development of these projects, the Italian trade union wants to play a proactive role in company innovation and ensure that direct employee participation practices, which are increasingly backed by local management, can represent an opportunity for employees' professionalisation and self-emancipation at work.

A Multi-Stakeholder Programme for Organisational Change in Sweden

In 2005, IF Metall and the Association of Swedish Engineering Industries (Teknikföretagen) contributed to the development of a comprehensive national programme, named *Productions Lyftet*. The programme is now led by a research institute, in collaboration with 7 universities and other critical industrial players; it is financed by Vinnova (the Sweden's Innovation Agency), the Swedish Agency for Economic and Regional Growth (Tillväxtverket) and by participating companies. The programme is aimed at promoting organisational change and renewal in Swedish companies (mainly SMEs), by applying lean production principles. Approximately 240 companies have already taken part in the 18-month change programme; some of them have also participated in the 9-month advanced programme. The programme's success is partly attributed to its 7 guiding principles (Help with self-help; Long-term approach; Diversity is an asset; Openness and experience exchange; A standard way of working; Learning by doing; Practice that we preach) and its long-term perspective, oriented towards a long-lasting and sustainable development. More recently, the programme has expanded its scope to accompany companies also in their digital transformation. Today, both IF Metall and Teknikföretagen sit on the board of the programme.

Further information at <https://www.produktionslyftet.se/>.

Diversity and Inclusion

Demographic change involves an increasing number of older adults in society and workplaces. However, research demonstrates that elderly possess many abilities (e.g., independent decision-making, system knowledge and understanding, interdisciplinary thinking, etc.) that are needed for Industry 4.0 and that, on the other hand, new technologies can compensate some of the declining physical abilities of an aging workforce; the challenge is thus to tailor work settings to the needs of elderly. Similar considerations can also be made concerning disabled people, for whom modern technologies can create new opportunities in the workplace. Serious challenges are though raised by the projections of future increases in disease events. Indeed, according to the International Agency for Research on Cancer, the absolute number of cancer cases in the 28-EU Countries is expected to rise due to demographic effects from 2.75 million in 2015 to over 3.1 million cases per year by 2025.

To deal with these challenges, workers' reps should make sure new work settings are designed by integrating the demographic perspective; periodical assessments of individual workers' tasks and abilities can allow planning their career development according to their specific needs, by also benefiting from the introduction of new technologies. Workers' reps should also promote prevention measures against the risk of chronic diseases at work; they should raise workers' awareness of the topic and contrast potential discriminatory conducts; they should engage in a dialogue with management and other relevant stakeholders on how to increase employment opportunities also for people with chronic illness.

Welfare Programmes for the Elderly in the Italian Company Beretta

The collective agreement at Beretta, signed on 28 March 2018, contains a list of already activated measures to deal with an aging workforce. Firstly, health nutrition is promoted by the provision of a dietician, that twice a

month is available to answer to employees' questions and provide information; moreover, the company canteen has been equipped with green, yellow and red signals for the classification of food according to its caloric intake. Free checkups are also organised and offered to employees aged over 40, thanks to a partnership with local hospitals. Finally, the company has been equipped with 7 defibrillators, and over 55 workers have been already trained to use them in case of an emergency.

Equal Opportunities

Industry 4.0 is supposed to automate many repetitive tasks, primarily performed by women, hence increasing the qualitative content of their work; however, the under-representation of women in key growth areas (i.e., jobs requiring STEM skills), their concentration in non-standard employment relations and the blurring boundaries between work and private life are raising serious concerns about persisting or even worsening gender inequalities. Moreover, the old 'macho' culture is difficult to get rid of especially in traditionally manual, cumbersome and male-dominated industrial settings, where it may even take the form of open opposition to safety measures, digital technologies taking over hazardous tasks and gender equality plans. Overturning this culture is thus pivotal to create safe and flexible workplaces better suited for the high-tech work of the future.

To deal with this challenge, workers' reps should proactively contribute to the creation of gender-equal organisations and a workplace culture supporting both women and men. Particularly, they should ensure that discrimination and harassment in the workplace are not acceptable, by signing collective agreements in this field and drafting with management joint action plans; within the framework of these plans, training courses and information activities on gender issues need to be implemented. Moreover, workers' reps should make sure that women are adequately represented in workplaces at all levels of the hierarchical structure; they should also negotiate over the introduction of work-life balance initiatives to sustain women's work.

Gender Equality Plans in Spanish companies

According to the Act No. 3/2007, Spanish companies with more than 250 employees shall negotiate with workers' representatives a gender equality plan. An example is represented by the *Equality Plan between Women and Men (Plan de igualdad entre mujeres y hombres)* signed on 27 September 2018 at Siemens Rail Automation. The Plan comprises 62 intervention measures in 10 broader areas:

- Access to work;
- Collective bargaining on gender issues;
- Training;
- Career development;
- Wage policy;
- Health and safety at work;
- Contrast to harassment;
- Contrast to gender violence;
- Awareness-raising campaigns;
- Work-life balance.

The plan also specifies the company departments responsible for carrying out the activities and their specific timing. A steering committee monitors the overall plan, composed of 2 corporate managers and 2 workers' representatives, which is also in charge of evaluating the efficacy of the plan and its impact on the organisation.

Towards a Feminist Trade Union Movement in Sweden

As early as 2008, LO released a document containing the main elements of a trade union policy against discrimination at work on the basis of sexual orientation or gender identity. In addition to stressing that everyone (i.e., employers, workers, union representatives) is responsible for a working climate which is free of discrimination, harassment and bullying, the document ends with a list of actions that trade unions should perform in this field. Notably, they should ensure that collective agreements are free of discriminatory wording and that gender issues are deepened in trade union training; plus, they should cooperate with management in the drafting of targeted action plans and the arrangement of workplace meetings on discrimination issues, by also involving external experts. More recently IF Metall has given additional impetus to this process of gender mainstreaming and, during its 2014 Congress, declared itself a feminist trade union, working for the benefit of its members, and for a democratic and equal society where everyone has the right to a safe and decent job.



International Fragmentation of Production

The widespread adoption of Industry 4.0-related technologies has the potential to transform the location and organisation of manufacturing production throughout the world. For instance, internet of things will allow for a greater interconnection between firms, their suppliers and customers and also individual contractors (gig- and crowd-workers), with a reduction of traditional intermediaries, and probably involve better and less costly management of geographically-dispersed value chains. However, the overcoming of spatial barriers and the prospect of a planetary labour market do not cancel territorial inequalities and do not make geography irrelevant. The increasing availability and the lower cost of industrial robotic systems, associated with higher labour production costs in developing economies, could indeed result in the reshoring of many activities to the advanced economies.

To deal with this challenge, workers' reps should adopt an international perspective, having in mind that the actions they perform at the local level can today have an immediate impact on other territories and workers. They should thus engage in a fruitful dialogue with foreign and international trade union organisations in view of adopting a coordinated and multi-level approach. Finally, they could experiment with ways to enlarge their representation scope to include also the new and increasing forms of work.

Organising Digital Workers: the Experience of IG Metall

In 2015, IG Metall promoted the launch of the platform 'FairCrowdWork', intended to gather crowd-workers from all over the world and allow them to exchange their views and rate working conditions on on-line labour platforms. Some researchers prototyped the rating system. The platform is now jointly managed and financed by IG Metall, the Austrian Chamber of Labour (Arbeiterkammer), the Austrian Trade Union Federation (Österreichischer Gewerkschaftsbund – ÖGB) and the Swedish white-collar un-

ion, Unionen, in association with research and development partners. This project can be ascribed to a broader strategy of the German union, aimed at expanding its traditional representation scope through the inclusion of new forms of work. In 2016, indeed, IG Metall opened itself to self-employed members and signed the *Frankfurt Paper on Platform-Based Work*, a joint statement of several societal players in Europe and North America calling for transnational multi-stakeholder cooperation to ensure fair working conditions in digital labour platforms. In 2017, the German union, along with 8 European crowdsourcing platforms and the German Crowdsourcing Association (Deutscher Crowdsourcing Verband), established an ombudsman office to settle disputes among crowd-workers, clients and platforms. This office is also intended to enforce the 'Crowdsourcing Code of Conduct' signed by the same 8 digital platforms.

Further information at <http://faircrowd.work>.

The 'Protocol for Common Action' between UGT-FICA and IG Metall

On 21 March 2014 the Spanish metalworkers' organisations, CCOO de Industria and the former MCA-UGT (Metal, Construcción y Afines de UGT) signed the 'Protocol for Common Action' with the German union IG Metall. Given the importance of industrial sectors in both national economies and the everyday challenges they had to face, the German and Spanish trade unions wanted to promote a better exchange of practices and information, thus preparing the ground for the development of joint courses of action. The signature of the protocol, hence, did usher in a closer collaboration between the workers' organisation, which continues today even after the merger of MCA-UGT and FITAG-UGT (Federación de Industria y Trabajadores Agrarios de UGT) and the establishment of UGT-FICA (Federación de Industria, Construcción y Agro de UGT). The German and Spanish trade unions regularly organise joint meetings and events, that address current economic and political issues, such as energy transition, digital transformation and the rise of populist and nationalist movements, and their impact on industry and work. Joint statements of the Spanish-German workgroup follow the meetings.





Environmental Sustainability

Industry 4.0 has to cope with the necessity of producing within environmental constraints in order to meet the challenge of sustainability. On the one hand, it has been contended that new technologies (e.g., advanced robotics, internet of things, additive manufacturing) can produce an increase in resource efficiency, for instance by reducing errors and improving the precision of production operations, allowing for predictive maintenance and reducing manufacturing waste. On the other hand, despite possibilities of energy optimisation provided by algorithms and data analytics, energy consumption represents a concrete challenge especially in relation to additive manufacturing; furthermore, the demands of raw materials and rare earth elements (e.g., lithium, dysprosium/terbium and rhenium) are expected to grow for the production of drones, sensors and other devices.

To deal with this challenge, workers' reps should deepen their knowledge about the environmental impact of Industry 4.0-related technologies and raise workers' awareness of the role they can play in gearing modern production towards sustainability. More participatory rights at all levels of industrial relations are also needed to allow workers and their representatives to be informed in due time about development strategies and play a concrete role in converging Industry 4.0 and environmental sustainability. This may entail, for instance, the revision of school curricula and company training courses and the provision of labour transition programmes assisting workers potentially affected by radical company restructuring. Trade unions must thus adopt a future-oriented perspective.

A New Social Pact for Sustainable Industrial Development in Spain

On 28 November 2016 the *Declaration of Social Partners for the Development of a Social Pact for Industry* (*Declaración de los Agentes Sociales instando al desarrollo de un Pacto de Estado por la Industria*) was signed in Spain by 4 trade union federations representing workers in industrial sec-

tors, construction and services (including UGT-FICA) and by the employers' associations participating in the so-called *Alliance for the Competitiveness of Spanish Industry (Alianza por la Competitividad de la Industria Española)*. The Declaration contains 9 policies (referring to energy efficiency and environmental sustainability, new infrastructures, lifelong learning, technological and digital development, smart regulation, fiscal measures, internationalisation of markets, support for innovation projects, etc.) aimed at boosting industrial competitiveness in accordance with the need to create good work and ensure environmental sustainability. These policies are intended to be the foundations for a new social pact for industrial development in Spain. After few years from its signature, the Declaration and its 9 policies still represent the guiding principles for the development of a stable, qualified and competitive industrial sector, in the belief that it plays a fundamental role in spurring progress and social well-being.

The Involvement of IF Metall in the Sustainable Development of Sweden

The programme *Produktion 2030* was launched in 2013 with the aim to make Sweden a frontrunner in investments in sustainable production by 2030. To achieve this goal, *Produktion 2030* promotes and strengthens networks and collaborations between different industries and sectors, both within Sweden and internationally, and brings together ideas, players and funding opportunities. More precisely, from 2013 to 2016, it funded 30 projects involving 150 companies and 50 research institutes; created around 20 events for knowledge transfer among small and medium enterprises; established a Ph.D. school; initiated 5 staff mobility projects; was involved in EU-wide platforms and supported stakeholders on EU-funding. *Produktion 2030* is financed by Vinnova, the Swedish Energy Agency (Energimyndigheten) and the Swedish Research Council Formas. It is built on collaboration between academia, research and industry associations, including IF Metall and Teknikföretagen. Moreover, both IF Metall and Teknikföretagen were involved in the development in 2016 of the legislative strategy named *Smart Industry*. One of its focus areas is called *Sustainable Production* and aimed at developing new or improving existing technologies, goods and services with consideration given to emission reductions, energy, and resource efficiency, reusability and recyclability. Further information at:

- <https://produktion2030.se>;
- <https://www.government.se/information-material/2016/04/smart-industry---a-strategy-for-new-industrialisation-for-sweden/>.

A Labour-Management Green Project in the Italian company Almaviva

Some company-level collective agreements signed in the metalworking sector in Italy focus on the goal of environmental sustainability, for instance, by providing for targeted training programmes, variable pay schemes related to 'green' goals and bilateral committees devoted to the analysis of solutions for an improved resource efficiency. An example is represented by the *Almaviva Green* project, launched at Almaviva in 2008. At that time, the internal negotiation for the renewal of the company-level collective agreement was stuck in the definition of the performance-related bonus. With the goal of finding new resources and reference indexes different from traditional ones, the company decided to put in place sustainable conducts, to use the resources from savings in consumption to finance the performance-related bonus. In May 2009, a joint (composed of managers and workers' representatives) and cross-departmental 'green team' was built and a roadmap (including a detailed action plan and its timing) was designed. In October 2009, Almaviva CEO underlined in communication that Almaviva's transformation into a 'green company' had become a strategic goal for the Group, concerning which workers' involvement had acquired an essential role. In addition to the inclusion of green goals in the performance-related bonus, an information campaign was launched, with the aim of raising workers' awareness and sensitivity on the functioning and objectives of the performance-related bonus. The performance-related pay scheme is now composed of 2 independent parameters: 75% linked to the trend of MOL/VPT (Typical Production Value) *ratio*; 25% linked to innovation and business processes' improvement projects (notably, goals of energy saving/efficiency within the framework of the *Almaviva iGreen* project), to be jointly defined by company and workers' representatives. Specific objectives can further be detailed at the plant level.



To successfully address all the challenges mentioned above, workers' reps are expected to evolve, by **juggling** new knowledge, skills and capabilities, that would elevate them to the 4.0 level!

Improved Knowledge

- on how the economy works and evolves
- on new technologies, their production flows and their possible effects on work
- on new specific labour-related issues, e.g. workers' personal data and privacy, environmental sustainability

Improved Attitudes and Skills

- communication skills
- leadership
- curiosity
- be prepared to change and lead change
- social skills
- be open
- be responsible
- be good listener
- willingness to learn
- openness to diversity
- creativity
- risk appetite
- team working
- trustworthiness
- be flexible
- problem solving
- be supportive
- be adaptable

Improved and New Abilities

- ability to participate in companies' strategic issues
- ability to negotiate
- change management and work organisation capacity
- analytical skills
- strategic skills
- ability to develop concrete actions and projects
- ability to get adequate information
- ability to train members
- networking with other workers' reps
- fundraising
- ability to communicate by using an appropriate language
- project management
- ability to anticipate change, by understanding companies' strategies
- ability to transmit the importance of Industry 4.0 to workers
- ability to use new and old means of communication

Unfortunately, though, nobody is born 4.0 and targeted training for workers' reps is needed...

Supporting Co-Determination in Industry 4.0: the Case of *Arbeit und Innovation*

Arbeit und Innovation is a German-wide initiative started by IG Metall in 2016 and co-financed by the European Social Fund and the Federal Ministry of Labour and Social Affairs. Its main goal is to provide works councils and managers with the necessary skills to co-determine and co-manage the introduction of new technologies. To do so, it relies on the expertise of labour-oriented consultancy firms and the Ruhr University of Bochum. More precisely, *Arbeit und Innovation* is targeted to those companies that have already started or are about to start own innovation projects, such as the introduction of augmented reality devices and exoskeletons in some departments or the launch of new workers' qualification programmes. *Arbeit und Innovation* makes available to these companies the technical support of IG Metall unionists and external consultants, for the development of their own projects; more importantly, it allows for the involvement of both works councils' members and company managers in a comprehensive training programme, articulated in 5 distinct modules. Each module lasts 2,5 days and is held at IG Metall training centres; one module though requires the technological equipment of the Learning Factory (a learning environment provided with modern technologies and enabling a 'hands-on' approach to education) of the Ruhr University of Bochum and is thus held at its premises. Modules provide participants with general knowledge on digital transformation, legal bases for co-determination in significant topics (e.g., workers' training, work organisation, introduction and use of technical devices, health and safety at work, etc.) and project management skills. Interestingly, the module held at the Learning Factory of the Ruhr University of Bochum is intended to make works councils' members and company managers experiment digital technologies (e.g., virtual and augmented reality glasses, collaborative robots, 3D printers, etc.). Particularly, participants test different digital assistance systems, thus learning their functioning and the importance of their integration within the specific business organisation; they also practice designing smart assistance systems on their own, through the use of a particular on-line application.

Further information at <https://www.igmetall.de/arbeit-innovation.htm>.

Enabling Workers' Representatives to Bargain over Digitalisation: the Case of *Arbeit 2020*

Arbeit 2020 is a project initiated in 2015 in North Rhine-Westphalia (Germany) by the regional structures of IG Metall, IG BCE (a German trade union in mining, chemical, and energy industries) and NGG (a German trade union in food, beverage and catering industry). Its main goal is to enable works councils' members to bargain over digitalisation in workplaces. To do so, it relies on the partial financing of the regional Ministry of Labour and Social Affairs and the European Social Fund as well as on the technical support of 2 labour-oriented consultancy firms. More specifically, the project starts when the company declares its willingness, possibly within a preliminary agreement and after meetings with IG Metall unionists and consultants, to pursue a joint development strategy. In the following step, workshops with works councils' members and interviews with managers and IT experts in the company are held to shed light on the company's strategy towards innovation. Workshops are then organised with employees by departments to collect insights into the current state of the company and its likeliest future developments. Particularly, 3 topics are addressed:

- work organisation (with specific regard to the chain of command);
- technology (with particular emphasis on the level of digital connectedness and the level of self-control of machines);
- employment trends, skills and qualification measures and working conditions (in this regard, aspects such as stress and workload are carefully considered).

After gathering all the relevant information, IG Metall unionists and consultants outline a 'Map of digitalisation' in the company, which highlights the relevant issues at stake and the critical aspects to be tackled. The map is then presented to the works council and management, with the aim of narrowing down pivotal topics (usually related to skills development, work organisation, workers' data protection, etc.) and enabling the works council to bargain with management over them. Via the signature of a plant-level agreement, the works council thus starts to influence the company's development plans. The project entered its second phase in 2017 with already 30 metalworking companies involved and from 2016 is under the scientific assessment of the Institute of Work, Skills and Training of the University of Duisburg-Essen, within the framework of a further research work funded by the Hans Böckler Foundation (the research institute of the German trade union confederation DGB).

Further information at <https://www.arbeit2020.de>.



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