Healthy Workplaces Campaign 2023-2025

Campaign Guide

**Safe and healthy work
in the digital age**

#EUhealthyworkplaces
www.healthy-workplaces.eu

European Agency
for Safety and Health
at Work

Healthy Workplaces

About the guide

Who should use this guide?
You should use this guide if you want to know more about the impact of new digital technologies on work and the associated occupational safety and health challenges and opportunities and you're looking for ways to raise awareness about it.

What is the issue?
Digital working brings remarkable benefits, but only if designed, implemented, managed and used in line with a human-centred approach.

Why should I get involved in the campaign?
It is important to go beyond the bits and bytes and put people at the centre of the digital workplace.

Get information on the relevant EU regulations.
All companies operating in the digital workplace need to be fully attuned to EU regulations.

Check out the priority areas of the campaign.
Remote work, smart digital systems, digital platform work, advanced robotics or worker management: a range of publications and practical resources are made available for each of these topics.

Read our case studies.
Learn how others have embraced digital transformation in the workplace to work in a modern, smart and safe way.

Participate in our Healthy Workplaces Good Practice Awards.
Has your organisation made an outstanding and innovative contribution to occupational safety and health at work?
Time to show it off!

Become an official campaign partner.
Don't miss this opportunity if you are an international or pan-European organisation with representation or network members in several EU Member States.

EU-OSHA carried out a four-year research programme on digitalisation of the workplace and its implications for OSH. The aim was to investigate the challenges and opportunities for OSH as a result of the use of digital systems in the workplace and related policies.

The research also explored ways to improve our understanding of this topic and identify effective ways of preventing risks. It looked into workplace measures to help manage and prevent risks, while taking full advantage of the opportunities for OSH deriving from digitalisation.

The **OSH Overview on Digitalisation** provides information for policy, prevention and practice in relation to the challenges and opportunities of digitalisation in the context of OSH.

Contents

1. Introduction

From virtual assistants and employee apps to automation solutions, the integration of digital technology is changing workplaces everywhere. Digitalisation is impacting our everyday lives, society and the world of work. For workers and employers in many workplaces and in all sectors, digital technology offers increased opportunities but also presents greater challenges and risks in terms of safety and health. It is important to go beyond the bits and bytes and put people at the centre of the digitalisation of the economy.

If designed, implemented, managed and used in line with the human-centred approach, digital technologies will be safe and productive. But as the use of digital technologies at work is on the rise and its impact on work and workplaces is still not fully understood, it is important to raise awareness about how to fine-tune strategies that promote and protect workers' safety and health. This is the focus of the European Agency for Safety and Health at Work (EU-OSHA) **2023-25 [Healthy Workplaces Campaign](link)** (HWC 2023-25), **'Safe and healthy work in the digital age'**.

The aim of the HWC 2023–2025 is to stimulate collaboration for a safe and productive digital transformation of work. One way to make the journey is through strategic planning based on the five main objectives.

1. Raise awareness about the importance, relevance and implications for occupational safety and health (OSH) of the digital transformation of work, including the business case by providing facts and figures.

2. Increase everyone's awareness and practical knowledge across all sectors, types of workplaces and specific groups of workers (e.g. women, migrants) about a safe and productive use of digital technologies at work.

3. Improve knowledge about new and emerging risks and opportunities related to the digital transformation of work.

4. Promote risk assessment and a healthy and safe proactive management of the digital transformation of work by providing access to relevant resources (e.g. good practice, checklists, tools and guidance).

5. Bringing stakeholders together to facilitate the exchange of information, knowledge and good practice and stimulate collaboration for a safe and productive digital transformation of work.

Committed to strengthening the prevention culture at all levels, the campaign is in line with the European Commission's **Vision Zero approach** to eliminate work-related deaths, a key priority of the [2021–2027 EU strategic framework on health and safety at work](link), and the objectives of the [European digital strategy](link).

Five **priority areas** underpin the HWC 2023-25:

- digital platform work
- automation of tasks
- remote and hybrid work
- worker management through artificial intelligence (AI)
- smart digital systems.

With so many challenges associated with the digital transformation, it is important to rely on sound research to help navigate the terrain. This includes the findings and resources of EU-OSHA's 2020–2023 OSH overview on digitalisation, but it also considers EU-OSHA research in other areas, such as its foresight studies and the OSH overview on supporting compliance.

A cross-cutting priority of the HWC 2023–2025 is to consider the gender dimension and the impact of digitalisation on workforce diversity and on groups of vulnerable workers. It will also focus on personnel employed under

flexible working arrangements, working away from the employer's premises, in contact with or visiting clients, or working in decentralised premises (e.g. remote workers, platform workers). The campaign will also delve deeper into the experiences of companies and organisations from across Europe. By sharing and promoting good practices, it will help increase collaboration between workers and employers to prevent risks connected to the use of digital technologies in the workplace while making the most of them.

Overall, the HWC 2023–2025 is an opportunity to position OSH within the wider policy debate surrounding digitalisation. As such, it will also target policy and decision-makers who are responsible for legislation, strategies and action. The aim will be to encourage discussions concerning the introduction of relevant regulation, guidelines, awareness raising, subsidies and funding, and the development of new services and products.

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1.1. Campaign materials and resources

Visit the campaign website (www.healthy-workplaces.eu) to find a wide range of materials and resources designed to help you promote and support the campaign. Most of these resources are available in 25 languages.

- Core campaign resources: campaign guide, poster, leaflet, PowerPoint presentation, Good Practice Awards information flyer, campaign video.
- Reports and policy briefs presenting latest research.
- A series of info sheets.

- OSHwiki articles.
- Virtual information sessions around each priority area.
- Online campaign toolkit – information on how to run a successful campaign and the resources you can use.
- Animated film 'Napo in … robots at work'. Part of a series of films supported by EU-OSHA.
- Vocational training resources.
- Branded visuals (such as virtual backgrounds for Zoom and Teams conferences, social media and website banners, email signatures, etc.).

1.2. Key dates

2023

September 2023: EU campaign partnership meeting.
October 2023: campaign launch including go live of official campaign website and start of Healthy Workplaces Good Practice Awards; and European Week for Safety and Health at Work.

2024

Throughout 2024: activities organised by focal points and other campaign partners.
October 2024: European Week for Safety and Health at Work.
November 2024: Good Practice Awards – deadline for submission of national examples.

2025

Throughout 2025: activities organised by focal points and other campaign partners.
Spring 2025: Healthy Workplaces Good Practice Exchange event with official campaign partners.
April 2025: Good Practice Awards – announcement of winners and commended examples.
October 2025: European Week for Safety and Health at Work.
November 2025: Healthy Workplaces Summit and Good Practice Awards ceremony.

Find events in your country at https://healthy-workplaces.osha.europa.eu/en/media-centre/events.

2. Safe and healthy work in the digital age

2.1. What are the opportunities and the risks of digitalisation?

Digital technologies provide essential services and solutions in all sectors of the economy and society. Their integration into the workplace is changing how we work, as well as where and when we work. Digital technologies are also reshaping the future of work, such as the types of jobs available, and the way work is provided, organised and managed.

Change is inevitable in workplaces across Europe. No sector is immune as companies introduce digital technologies that have the potential to increase productivity, for example, by automating tasks or by digitally managing workers in traditional work settings (e.g. at the employer's premises), in remote workplaces or in workplaces at home.

In a world driven by the internet of things, artificial intelligence (AI), big data, cloud computing, algorithms, collaborative robotics, augmented reality, additive manufacturing and online labour platforms, emerging technologies are powering digital workplace solutions.

Artificial intelligence

As defined by the European Commission, Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking action – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software based acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems), or can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones and internet of things applications).[1]

Big data

Big data, as defined by the Organisation for Economic Co-operation and Development[2] are datasets characterised by volume (large size), velocity (constantly growing) and variety (structured and unstructured forms such as texts), which are often used by AI machines.

Automation

Automation is a device or system that accomplishes (partially or fully) a function that was previously, or conceivably could be, carried out (partially or fully) by a human.[3]

EU-OSHA's third European Survey of Enterprises on New and Emerging Risks[4] (ESENER 2019) provides insight into the digital technology trends at work. As the data show, personal computers, laptops, tablets, smartphones and other mobile devices are used in more than 80 % of enterprises in the EU-27. More recent data from the EU-OSHA OSH Pulse 2022[5] workers' survey indicate that 73 % of workers use laptops, tablets, smartphones or other portable digital devices, 60 % use desktop computers, 11 % wearable devices such as smart glasses, activity trackers or other sensors, and 3 % use robots that interact with them.

While large enterprises continue to lead the way in the use of digital technologies, the number of Europeans working daily with digital systems and tools is increasing. Around 40 % of people living in the EU-27 were using computers, laptops, smartphones, tablets or other portable devices at work, including other computerised equipment or machinery such as those used in production lines, transportation or other services at

work.[6] In addition, 31 % of employed persons in 2021 – at the height of the COVID-19 pandemic – were provided with a portable device to connect to the internet for business purposes. This was up from 26 % in 2018.[7]

In terms of remote work potential, the data show that 12 % of EU-27 workplaces in 2019 allowed employees to work from home using digital technologies, and in 2020 12.3 % of employees did work from home (up from 5.4 % in 2019).[8] Again, data from the EU-OSHA OSH Pulse 2022[9] survey suggest that 17 % of workers (either employees or self-employed) have been working from home for most of the time in the previous 12 months.

Between 9.5 % and 11 % of workers have gained income from providing services through a digital labour platform, based on the collaborative economy (COLLEEM) survey estimates.[10] Meanwhile, 17 % of those interviewed for a European Trade Union Institute (ETUI) study[11] were classified as internet workers, 4.3 % of which were classified as platform workers.

Opportunities

The increasing digitalisation of the economy and the use of digital technologies in the workplace bring opportunities for workers and employers. At the same time, digitalisation can create new opportunities for improving OSH.

- Automation relegates repetitive, labour-intensive and unsafe tasks to machines. Robotics and AI support and replace workers in hazardous working environments.
- Digital technologies and performance enhancing technologies (e.g. exoskeletons) improve access to the labour market for disadvantaged workers such as disabled workers, migrants or workers located in areas with scarce employment opportunities.
- Better monitoring combined with big data allow for more timely and effective interventions.
- A better work–life balance, flexibility and autonomy experienced by workers who can work from home.

Data from EU-OSHA's OSH Pulse 2022 survey[12] show that digital technologies are used to monitor noise, chemicals, dust and gases in the working environment of 19.2 % of European workers, and to monitor the heart rate, blood pressure, posture and other vitals of 7.4 % of workers personally.

Data from the same source also show that home-based remote workers are less likely to be exposed to violence or verbal abuse from customers, patients and pupils, or to harassment or bullying. Home-based teleworkers report exposure to violence or verbal abuse in only 7.9 % of cases (15.7 % in the total working population) as they work mostly in jobs involving reduced interaction with third parties, and to harassment or bullying in only 4.4 % of cases (versus 7.3 % of total population) as the social isolation (including from colleagues and superiors) can have a mitigating role in this respect. It is worth mentioning that home-based remote

workers are less likely to report a lack of autonomy, or influence over the work pace or

work processes (14.4 %) when compared to the total of workers.

Risks

There are also challenges and risks for OSH stemming from the deployment of digital technologies into the workplace, as discusses in a range of recent EU-OSHA research reports based on extensive literature reviews, statistical analysis of relevant data and fieldwork.[13]

- Digital monitoring, loss of autonomy, work intensification and pressure to perform at a certain standard.
- Middle management jobs are replaced by algorithms allocating tasks to workers and monitoring their performance.
- Loss of job control, fragmentation of jobs into very simple tasks to be executed in a standard way, narrowed job content and de-skilling of jobs.

- Isolation of workers, increase of virtual interactions and loss of peer support.
- Incorrect or unfair decisions about workers stemming from automated or semi-automated processes using data and/or software containing mistakes.
- Systems of nudges and penalties and the rating of workers' performance.
- Unclear responsibility for OSH and the applicability of the existing OSH regulatory framework.
- Mobility, flexibility, 24/7 availability and blurring of boundaries between work and private life.
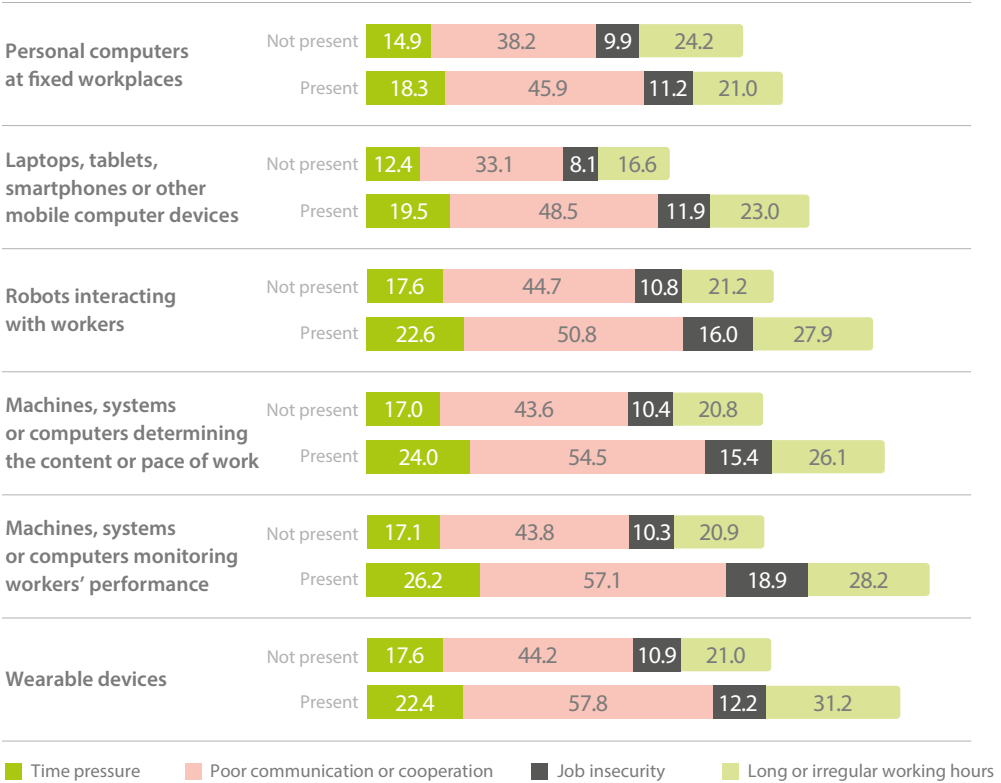
Algorithms

An algorithm is 'a set of rules that must be followed when solving a particular problem'.[14] In the context of digitalisation processes, the reference is to software algorithms, that is, 'computer-programmed procedures for transforming input data into a desired output' (Kellogg et al., 2020).[15]

Evidence from the 2019 ESENER survey shows that psychosocial risks are more commonly reported in workplaces where digital technologies are used.

Workplaces by type of digital technology (present or not present) and a number of reported psychosocial risks – EU-27, 2019 (%)

		Time pressure	Poor communication or cooperation	Job insecurity	Long or irregular working hours
Personal computers at fixed workplaces	Not present	14.9	38.2	9.9	24.2
	Present	18.3	45.9	11.2	21.0
Laptops, tablets, smartphones or other mobile computer devices	Not present	12.4	33.1	8.1	16.6
	Present	19.5	48.5	11.9	23.0
Robots interacting with workers	Not present	17.6	44.7	10.8	21.2
	Present	22.6	50.8	16.0	27.9
Machines, systems or computers determining the content or pace of work	Not present	17.0	43.6	10.4	20.8
	Present	24.0	54.5	15.4	26.1
Machines, systems or computers monitoring workers' performance	Not present	17.1	43.8	10.3	20.9
	Present	26.2	57.1	18.9	28.2
Wearable devices	Not present	17.6	44.2	10.9	21.0
	Present	22.4	57.8	12.2	31.2

■ Time pressure ■ Poor communication or cooperation ■ Job insecurity ■ Long or irregular working hours

Source: ESENER 2019 – weighted data (weight: estex).

Data from EU-OSHA's OSH Pulse 2022 survey[16] show that home-based remote workers report an increase of workload (33.2 %), speed or pace of work determined by digital technologies (61.2 %), social isolation (56.8 %) and severe time pressure or overload of work (46.9 %) more frequently than the total employed population. This is in line with recent research carried out by EU-OSHA (2021) on a qualitative sample of home-based teleworkers during the COVID-19 pandemic,[17] which displays the increased psychosocial risks to which teleworkers are exposed.

2.2. Preventing risks related to digitalisation

Like any other OSH risks, those related to the increasing digitalisation of the workplace are preventable and manageable. They can be tackled by:

- adopting a human-centred and human-in-command approach;
- guaranteeing employers, managers, workers and their representatives equal access to information;
- consultation and participation of workers and their representatives, in line with requirements of the OSH framework, in the decisions taken with regards to the development, implementation and use of digital technologies and systems;

- guaranteeing transparency about the way a digital tool operates, what kind of effects it can create and its benefits and drawbacks; and
- fostering a holistic approach in evaluating digital technologies and systems by including different stakeholders in the evaluation process, which should also cover the effects that digitalisation has on workers and society as a whole.

Human-in-command approach to digital transformation

An inclusive human-in-command approach should be central to digital transformation, with AI and digital technologies supporting but not replacing human control and decisions, and based on the information, consultation and participation of workers. More specifically, the design, development and use of human-centred digital systems allows them to be used to support workers, while leaving humans in control.

According to the European Economic and Social Committee, the human-in-command principle should be incorporated in all regulations in the area of AI.[18]

Occupational safety and health risks related to the increasing digitalisation of the workplace are preventable and manageable.

To make the most of the opportunities related to digital technologies in the workplace but to also prevent any related risks, it is necessary to consider safety and health issues as early as the design stage. Waiting until the implementation stage may be too late in the process. Involving programmers and developers from preliminary stages is therefore important.

It is just as important to enhance digital literacy among workers and employers by promoting qualification and skills development for digital applications. This would empower them through a better understanding of digital systems and the risks and opportunities stemming from them.

2.3. Regulation on digitalisation and safety and health at work

The regulatory framework applicable for safe and healthy workplaces in the digital age is made up of OSH-specific legislation. It also includes a number of initiatives in the area of digitalisation carried out at the EU level over the last few years that are relevant or have implications for OSH.

The risks deriving from digitalisation in the workplace fall within the scope of Directive 89/391/EEC - the OSH framework directive, and the national legislations that transposed it into law. In addition to protecting workers from work-related risks, it also establishes the employer's responsibility for ensuring workplace safety and health.

The employer shall take the measures necessary for the safety and health protection of workers, including prevention of occupational risk and provision of information and training, together with provision of the necessary organisation and means.

Article 6 of the OSH framework directive.
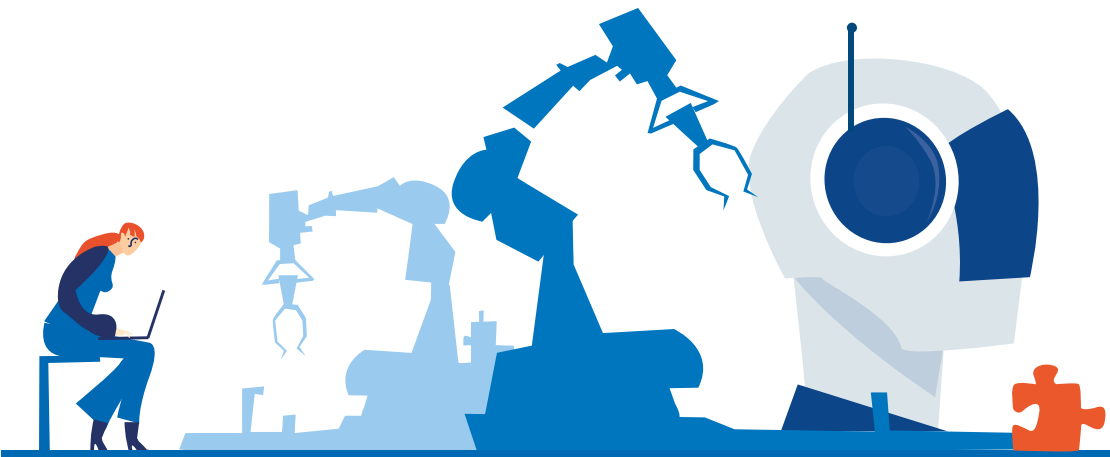
Some of the risks stemming from the use of digital technologies in the workplace are tackled by specific directives.[19] Most notably, the display screen equipment directive (Directive 90/270/EEC), the machinery directive (Directive 2006/42/EC), the CE marking guarantees the conformity of the products, especially relevant in workplaces using collaborative robots (cobots), and the workplace requirements directive (Directive 89/654/EEC), regarding technical maintenance of the workplace and of equipment and devices.

The use of work equipment directive (Directive 2009/104/EC) addresses the positions adopted by workers when using work equipment and makes clear that employers must consider ergonomic principles to comply with minimum OSH requirements. In addition, the information and consultation of employees directive (Directive 2002/14/EC) stipulates that in larger workplaces workers should be consulted or informed about decisions that might lead to significant changes.

The working time directive (Directive 2003/88/EC) is also of relevance for the safe use of digital technologies in the workplace. It sets minimum periods of daily rest, weekly rest and annual leave, breaks and maximum weekly working time.

In addition, it is worth mentioning that the general data protection regulation (Regulation (EU) 2016/679)[20] contains a number of provisions that protect workers from unfair, non-transparent, and unjustified gathering and use of personal data facilitated by digital technologies and extensively employed in algorithmic or AI-based management of workers.

On a final note, the 2021–2027 EU OSH strategic framework updated the protection standards for workers and tackled traditional and new work-related risks, including those stemming from digitalisation.

There are also directives and regulations covering personal protective equipment (PPE).

Examples of EU initiatives in the area of digitalisation and OSH

In recent times, in the area of AI, the EU has been proposing and introducing several legislative and non-legislative initiatives, including the following examples.

In 2018, the declaration on cooperation on AI was signed by 24 Member States and Norway and the Commission communication on AI for Europe was adopted. Relevant to OSH are the provisions in the communication addressing algorithmic decision-making (pp. 13–16 of the communication), as ethical and legal questions related to the liability and fairness of decision-making based on AI are acknowledged. The communication also notes that AI systems should be developed in a manner that allows humans to understand at least the basis of their actions.

In 2019, the Commission released a communication on building trust in human-centric AI to highlight the importance of building trust in AI by putting humans in command of it, and setting the requirements that ensure that AI is trustworthy.

In 2020, the Commission launched the European digital strategy, of which the priority areas 'Technology that works for people' and 'A fair and competitive digital economy' are especially relevant to prevent risks related to digitalisation in the workplace, and released the White Paper on artificial intelligence – A European approach to excellence and trust. The White Paper sets out possible legal changes, proposing that a legal definition of AI and new laws regulating high-risk AI systems be created – systems that create an adverse impact on people's safety or their fundamental rights. It also sets a number of principles that are especially relevant for their implications in terms of OSH, in particular the human-centred and human-in-command approaches, the principle of data protection and right to privacy, the aspects related to the need for transparency and the principle of non-discrimination and fairness. The White Paper was accompanied by the European data strategy.

In 2021, the Commission published a proposal to create a comprehensive legal framework for AI – the proposal for a regulation on a European approach for AI. It was published alongside the communication on fostering a European approach to AI, which draws attention to the aspect of trust in AI technologies and the need for a proportionate and risk-based European regulatory approach. The regulation proposal aims to ensure the safe deployment of AI-based systems, prohibiting some of them while casting others as being high risk and requiring more safeguards for the design, development and use of such systems.

At the end of 2021, the Commission published a set of measures to tackle risks related to digital platform work. The initiative, aiming to 'improve the working conditions of people working through digital labour platforms' includes the communication on better working conditions for a stronger social Europe: harnessing the full benefits of digitalisation for the future of work and a proposal for a directive, and overall contains several provisions in a number of areas including algorithmic management, fair treatment of workers and social partners consultation.

More initiatives are currently being developed and are expected to be in place in the future.

Find out more about safety and health legislation in the EU, and in the area of digitalisation, at https://healthy-workplaces.osha.europa.eu/en/tools-and-publications/legislation.

3. Priority areas of the campaign

Digital platform work

Automation of tasks

Remote and hybrid work

Smart digital systems

Worker management through AI

https://healthy-workplaces.osha.europa.eu/en/about-topic/priority-areas

3.1. Priority area: digital platform work

Digital platform work promises high levels of flexibility and autonomy for the worker regarding when and how much to work,[21] but this is subject to different degrees depending on the work arrangements, the type of job and the skills required, as the work can be high skilled or low skilled. Occasionally, digital platform work provides employment opportunities in geographical areas where such opportunities are lacking and for groups of workers who have difficulties in accessing the labour market.

In a recent EU-OSHA research report,[22] digital platform work is defined as 'all paid work provided through, on or mediated by an online platform'. More than 500 platforms are active in the EU, and they include international companies and small national or local start-ups. While the majority provide on-location services, many are entirely online.

Considering the growing heterogeneity of digital platform work, it is useful to classify them to better understand opportunities and risks for OSH. According to a number of dimensions, four main types of platforms can be identified.[23]

The first dimension to consider is the **format of labour provision**, which is either online or on-location. While the actual matching of platform workers to clients is conducted online, the work itself is either performed on-location or online from any location.

The second dimension is the **skill level required to execute the task**. This can be low or high and is measured in terms of the content, scale and complexity of the task that affect the OSH risks that platform workers face.

The third dimension is the **level of control exercised by the platform**. Ranging from low to high, this shows the degree of subordination, which is the main legal criterion used to determine the employment status and applicable OSH regulations. But the level of subordination also reveals the reliance of digital labour platforms on algorithmic management.

Types of digital platform work
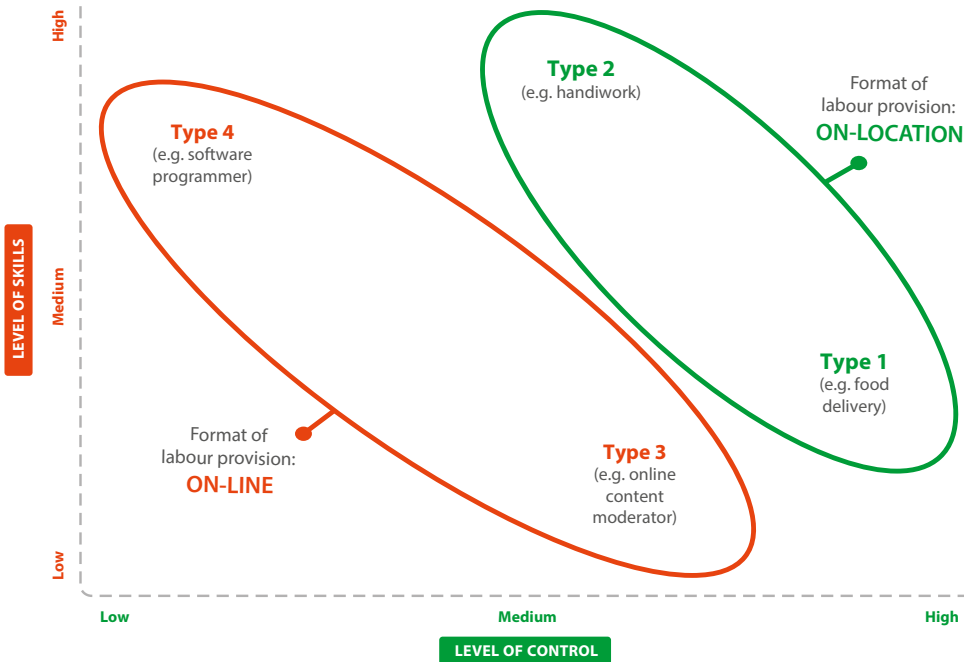
Source: EU-OSHA (2021).

For every opportunity offered by digital platform work, there is more than one challenge and OSH risk for workers.

Most of the risks and challenges regarding OSH for platform workers are similar to those of any other workers performing the same tasks outside the platform economy, although there are also risks related to the way platform work is organised, designed and managed.

In addition, digital platform work often involves jobs in occupations and sectors that are associated with poorer working conditions. Also, platform work often involves extra tasks or a different combination of tasks that may make workers more exposed to risks than workers performing comparable tasks outside the platform economy. Recent EU-OSHA research[24] shows that platform work is associated with a number of OSH risks including professional isolation and loneliness,

along with the intensification of work, long working hours and algorithmic management, digital monitoring and surveillance. A blurred work–life balance that can lead to highly stressful circumstances is also common among platform workers.

What is more, the legal classification of platform workers is another factor to consider. Platform workers are usually classified as self-employed, therefore, the applicability of OSH provisions and employment regulations to them is limited in most Member States.

In this context, the campaign aims to raise awareness and promote knowledge about OSH challenges and risks related to digital platform work targeting a range of stakeholders, with a special focus on the platforms themselves, the platform workers and policy and decision-makers. Practical tools to prevent risks related to platform work are also available.

Digital platform work involves jobs in occupations and sectors that are at high risk and associated with poorer working conditions.

Case study

An example of national regulation on digital platform work

The riders' law[25] entered into force in 2021 with the declared aim of regulating the rights of platform workers in the delivery sector in Spain. This legislation introduced a right to algorithmic transparency at a national regulatory level. Every type of digital platform is required to inform the (platform) workers' legal representatives about the inner functioning of the algorithms 'that may affect working conditions, and access to and maintenance of employment, including profiling' (Article 64.4. of the Workers' Statute). Furthermore, the law provides a legal presumption of a dependent employment relationship for digital platform workers in the delivery sector (Additional Provision 23 of the Workers' Statute). Both issues correspond directly to two of the most relevant underlying causes for OSH-related challenges commonly identified in research.

3.2. Priority area: automation of tasks

Advanced, collaborative robotic systems (cobots) that closely interact with humans are increasingly being integrated into workplaces across Europe, along with AI-based software that is currently used in a number of applications. Due to the variety of technologies and applications, a focus on tasks rather than jobs is an effective approach as these (automation) technologies assist or substitute individual functions in specific tasks. The task approach allows for a more nuanced and detailed understanding of which specific aspects of human work can be more easily automated. To accomplish different tasks, either cognitive functions, such as information processing, or physical actions, such as object manipulation, are necessary. Therefore, two main categories of systems can be defined, those for the automation of cognitive tasks and those for the automation of physical tasks. There are also systems that can perform both types of tasks.

AI-based and advanced robotic systems bring along opportunities for workers and employers, as they can perform the high-risk or the non-creative, repetitive tasks that workers are required to carry out in their day-to-day work, which are associated with a number of traditional and emerging OSH risks, leaving the low-risk tasks and creative job content to the workers. In addition, AI-based and advanced robotic systems for the automation of tasks provide significant potential for prevention, in terms of workers' exposure to hazardous environments, and can free up workers' time for continuous learning and to exercise or develop creativity, which would benefit workers and employers alike. AI-based and advanced robotic systems for the automation of tasks would therefore represent an opportunity as long as workers remain in control of the whole work process in a transparent way. Nevertheless, the generalised lack of adequate understanding of AI-based and advanced robotic systems for the automation of tasks, cobots and associated technologies can result in a limited awareness of the opportunities that such technologies can bring along and their implications for OSH.

However, using digital technologies for automation processes also comes with a number of potential risks and challenges, like the loss of human situation awareness, over-reliance or possible loss of specific skills of workers as displayed in recent EU-OSHA research.[26] The intended benefits of automation and the challenges are both related to which and how many functions are automated.

To provide meaningful advice for prevention, policy and practice regarding AI-based ICT and advanced robots in the workplace, it is necessary to consider all relevant aspects of a work system.[27]

Physical aspects include outcomes related to physical health like collisions (e.g. between robots and workers) and the occurrence of musculoskeletal disorders due to repetitive movements in the interaction with the robotic systems. Outcomes related to the psychosocial dimension include factors like well-being, motivation, stress and fatigue, and are related to health indices, such as productivity and absence.

Major risks across sectors, jobs or tasks are the fear of job loss, the negative impacts of job transformations, and the lack of trust in the systems along with the possible loss of autonomy through it. Loss of privacy could also be a concern since AI-based systems by design often gather and to some extent analyse data.

In terms of organisational changes, one of the biggest challenges is the demand for re- and upskilling. This entails training the staff in working with the advanced robotic technology, while simultaneously avoiding deskilling and the loss of other competences.

Using digital technologies for automation processes comes with a number of opportunities for workers and employers, as they can perform the high-risk or the non-creative, repetitive tasks that workers are required to carry out in their day-to-day work, but also of potential risks and challenges, like the loss of human situation awareness, overreliance or possible loss of specific skills of workers.

Case study
Automation for materials handling and identification

Greek cement company Titan S.A.[28] develops AI-based robotic systems in the context of materials handling and identification, providing tailor-made solutions to clients in a number of sectors. Used to identify products and ensure quality control, this technology can be applied in the production of sorting machines that operate within a short time frame. Previously considered a human task, its automation is now possible with the support of AI and advanced robotics. For instance, AI can scan the product to determine whether it complies with the present criteria, and the robotic component can physically sort out the products that do not fit.

The machine can perform this task at a significantly faster pace than workers. While this is clearly an advantage in terms of efficiency, the company considered all possible risks involved. For instance, there is a certain degree of unpredictability that could arise from the self-learning capability of AI. With this in mind, the company minimised risks to workers by setting well-defined boundaries for the AI-system machines. The company also offered training to teach clients how to handle the machines safely and effectively, which feature an intuitive user interface to facilitate their operation.

The company follows EU directives as well as harmonised standards for selective machines. As the scope of AI is confined to the boundaries of the machine itself, the company determined no additional OSH risks for the workers that mandate application of another specific guideline or recommendation.
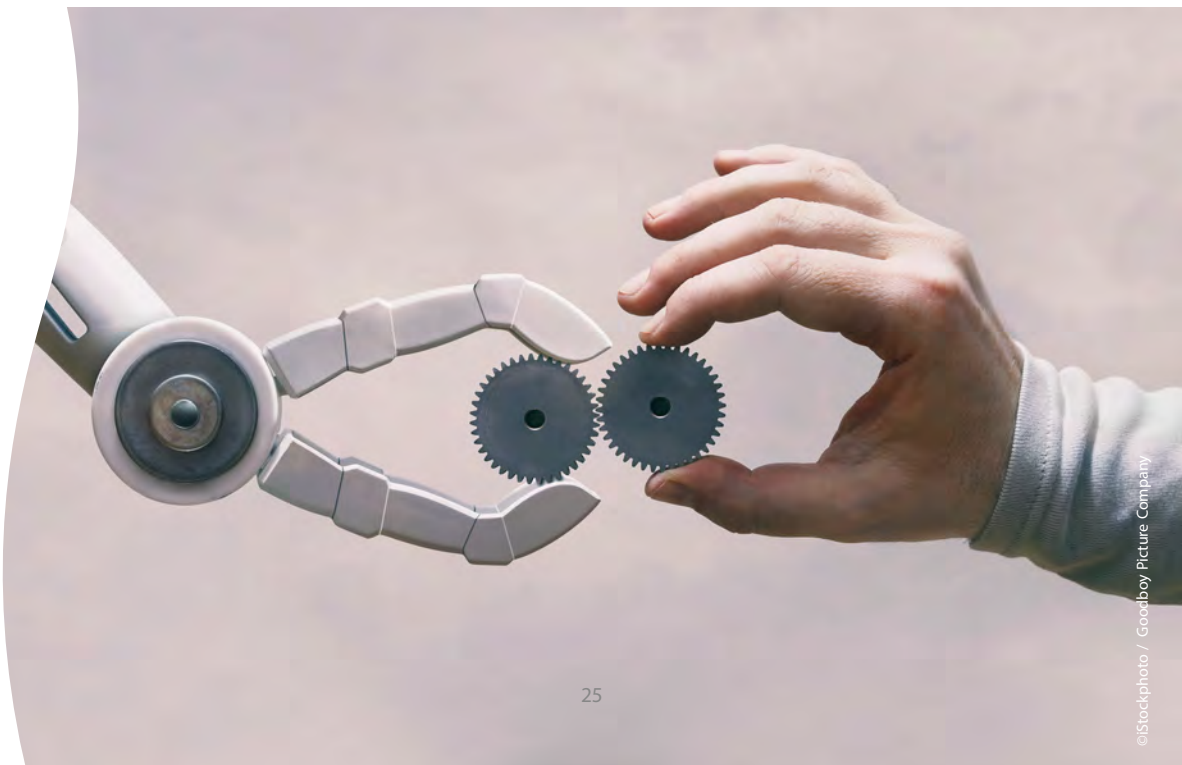
3.3. Priority area: remote and hybrid work

Remote and hybrid work, when based on an agreement between workers and employers, allow for increased flexibility and therefore for a better work–life balance, with a positive impact on workers' motivation and engagement and, consequently, their productivity. In addition, home-based remote work reduces commuting times and home-to-work accidents and could also allow for decreased office-related costs. Remote work can also allow workers to be removed from high-risk environments or from performing high-risk tasks when work can be provided remotely.

Remote work, hybrid work or telework?

Remote work can be defined as any type of working arrangement involving the use of digital technologies (e.g. personal computers, smartphones, laptops, software packages and the internet) to work from home or, more generally, away from the employer's premises for most or part of the working time. The combination of remote work with work at the employer's premises is also referred to as hybrid work. Telework is a common way to define home-based remote work.

Remote and hybrid work also bring challenges and risks for workers.[29] Risks stem from isolation and lone working, intensification of work, long or irregular working hours, requested continued availability, detachment from reality, and digital monitoring and surveillance. In addition, conflicts between private and working life can have a negative impact on workers' health and well-being as they can result in stress. The lack of information regarding OSH prevention in remote and virtual workplaces, the use of inadequate equipment (both ergonomic and digital equipment) and the challenge of carrying out risk assessments outside the employers' premises are also common risks in this area.

The campaign seeks to raise awareness and increase knowledge about OSH opportunities, challenges and risks related to remote work for all workers, as well as prevention practices and practical tools for assessing risks.

Preventing risks in home-based remote work: examples of practical tips for workers and employers

Home-based remote workers do not always have the same resources at home as they do in the office. For this reason, practical tips[30] for making the home office a comfortable, effective and healthy workplace and reducing the physical and psychosocial risks of remote working have been formulated by EU-OSHA. A number of tips about how to optimise workstation ergonomics and environment, how to improve the work–life balance,[31] how to avoid social isolation of teleworkers, how to manage home-based remote workers, and in general about how to stay healthy while connected have been made available by EU-OSHA in a series of info sheets targeting both workers and employers.[32]

Employers have a crucial role in preventing risks related to remote and hybrid work.

Firstly, employers can regulate remote and hybrid work through a clear policy, which should include provisions on how to assess and manage occupational risks, ergonomic equipment, hours of availability of remote workers and expected results.

Employer's mandatory risk assessment must also cover remote work in line with EU and national legislations. The participation of workers in the risk assessment process of remote work provides information key to taking the next steps towards an action plan to prevent risks, create awareness among remote workers and management and promote the adoption of safe behaviours.

To carry out effective risk assessments and risk prevention, employers need to keep themselves and their workers well informed and trained. As part of the HWC 2023–2025, EU-OSHA has developed a checklist.[33] Other resources – such as the Online interactive Risk Assessment (OiRA) tool[34] – can offer support to employers and worker representatives to implement remote work safely.

Other examples of employers' initiatives to support remote workers include:

- technical assistance and training to help remote workers to make optimal use of workstations;
- changes to the work organisation and training to help remote workers to stay active throughout the workday;
- training to help supervisors manage a remote workforce and keep in touch with remote workers;
- raising awareness among remote workers and their supervisors of risk factors related to remote work and how to deal with them; and
- providing ergonomic equipment.

Case study
Collective agreement to boost productivity and well-being of remote workers

Merck Serono[35] is a pharmaceutical company with 900 employees in Italy. Home-based remote working practices introduced during the COVID-19 pandemic were considered successful in terms of productivity and well-being. For this reason, Merck Serono negotiated a company-level agreement at the end of 2020 to make home-based remote working a normal work arrangement, which applies to all parts of the workforce that can perform their work remotely. Home-based remote work is on a voluntary basis and the specific arrangements must be negotiated with the head of each unit. The company provides the necessary equipment for remote working, including laptops and ICT equipment. The definition of working hours and hourly flexibility is delegated to collective bargaining at individual establishment level. Negotiations were conducted by Merck Serono's management, with the assistance of the sectoral employer organisations, the main trade union confederations and their representatives at company level. The social partners that participated in the design phase of the agreement are now taking part in the implementation phase.

3.4. Priority area: worker management through artificial intelligence

Digitalisation is changing the way work is organised and managed. New digital systems based on AI are increasingly being used in European workplaces to manage workers and organise their work.

AI-based worker management

It refers to a worker management system that gathers data, often in real time, from the workspace, workers and the tasks they do. The data are then fed into an AI-based system that makes automated or semi-automated decisions or provides information for decision-makers on worker management-related issues. The decisions and recommendations can regard establishing work shifts and/or the allocation of tasks, evaluating the performance of workers, monitoring the activities of workers and giving recommendations on how to prevent health risks.

Algorithmic management

It is characterised by the use of algorithms to allocate, monitor and evaluate work tasks and/or to monitor and evaluate workers' behaviour and performance. This is carried out through digital technologies and the (semi-) automatic implementation of decisions. It differs from the AI-based worker management as the latter involves intelligence simulation necessary to deal with uncertainty (e.g. providing different outputs based on the changes in the environment), while algorithmic management is deterministic in nature (i.e. it always provides the same output given the same input).

When these systems are used in the workplace, a specific process is followed to arrive at a prediction, recommendation or decision regarding the workers:

- data on workers, their workplace and/or the work they do are collected using worker monitoring or worker surveillance;
- data are processed so that an AI or algorithm-based system can use them, and processing may include, but is not limited to, extracting key points from textual information, structuring the collected data in a tabular form and calculating some statistics;
- processed data are fed into an AI or algorithm-based system that provides output in the form of a prediction, recommendation or decision on worker management issues;
- output is sent to those – humans or machines – that make decisions based on it, such as changing or modifying:
  - the work (allocating tasks or how tasks are performed),
  - the workplace/workspace (how work is organised),
  - workforce/workers (how workers are disciplined or rewarded).

These worker management systems can be used for semi- or fully automated decision-making.

Semi-automated means that the tools and systems do not make any decisions on their own, but they provide insights and empower human workers (e.g. the human resources manager) to make them.

Automated decision-making means that the AI- or algorithm-based systems make decisions on their own without the need for human supervision.

It is worth mentioning that even though fully automated decision-making is technically possible, it is bound by regulations. For instance, the EU's general data protection regulation (Article 22) prescribes that the data subject, which is the worker in this case, 'shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her'.[36]

Automated scheduling and task allocation

The scheduling and task allocation process in the workplace can be automated[37] using AI or algorithm-based systems. Examples include predicting customers' demands, so that an appropriate number of individuals can be scheduled to work or using virtual assistants during scheduling meetings that interpret what has been decided during the meeting and allocate work accordingly or assign workers to tasks that match their skills.

The automated scheduling and task allocation benefit companies by speeding up and sometimes improving the scheduling process. This also benefits workers by giving them a more flexible tool for scheduling their work.

However, these approaches can also have negative effects for workers, such as allocating work in excess to some of them when the AI or algorithm-based system is fed with biased data. Another risk is inducing stress by preventing workers from deciding the order in which they wish to carry out the work tasks allocated to them and therefore reducing their autonomy at work.

As extensively discussed in recent EU-OSHA reports,[38] psychosocial risk factors are frequently reported when AI-based systems are deployed in the workplace. More specifically, decision-making capacity can be limited or even removed, and the reduced autonomy and control over workers' work can result in workers' stress. Also, real-time recommendations and directions for workers on how they should do their job can result in pressure on workers to work faster leading to work-related stress, negative impacts on their physical health and accidents. Monitoring practices to gather workers' data can result in workers feeling that their privacy is invaded and that they are always watched, even during their non-working time.

The feeling of being observed can result in workers acting unnaturally, such as being forced to always smile or supress their true feelings, personality traits or preferences in order to please the algorithm. This can also result in stress.

To ensure these worker management systems provide opportunities to improve OSH in the workplace, it is important to design and implement them in a transparent way. It is also important to inform and consult workers, and to involve them, in the design and implementation of these systems to develop a comprehensive look on work processes. This is essential to build trust.

These systems could also have a supporting function for management and workers' representatives to optimise work organisation. Specifically, these systems can provide information that is helpful for identifying OSH issues, including psychosocial risks, and areas where OSH interventions are required. The aim is to reduce exposure to various risk factors and to provide early warnings of hazardous situations, stress and fatigue in relation to tasks and activities carried out by workers.

It is important to inform and consult workers and allow them to participate in the design and implementation of these systems. This is essential to build trust.

Case study
How can digitalisation support workers' mental health?

Psychosocial risk factors can be present in any workplace and across a range of sectors. Modern workplaces where digital technologies such as AI-based worker management systems or human–robot cooperation are used are no exception. However, digitalisation is also useful in detecting and preventing mental health issues among workers.

Take, for example, the mental health chatbots – software applications (robots) that interact with workers. The chatbots analyse workers' communication patterns to assess the risk of mental health issues, such as burnout. Some chatbots can also provide personalised support to at-risk workers.

To make the chatbot strategy a success, it is important for managers to be transparent about how the information is collected and managed. Knowing that this information will not be used against them helps workers feel more comfortable in disclosing their mental health issues.

Another example of how digitalisation can be used to promote mental health is MindBot, an EU-funded (Horizon 2020) project developing a 'mental health friendly MindBot platform' to be deployed in workplaces where automation has been introduced. These are workplaces where workers performing tasks that require unusually intense or sustained focus of attention and manual precision may experience inadequacy, and workers performing repetitive tasks may start perceiving low challenges and reduce their level of attention, which could result in accidents. In this context, MindBot aims to prevent stress, anxiety and boredom by supporting the worker's motivation and engagement within the cobot–worker interaction.

iStockphoto / Goodboy Picture Company

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3.5. Priority area: smart digital systems

Across many economic sectors and workplaces, smart digital systems for monitoring and enhancing workers' safety and health are implemented, such as smart PPE that can identify, for example, levels of gases, toxins, noise and high-risk temperatures. There are also wearables designed to interact with workers, such as sensors that can be embedded into hard hats or safety glasses, and mobile or fixed systems that use cameras and sensors (e.g. drones that effectively reach and monitor dangerous areas of worksites) keeping humans safe in the construction and mining industries. Virtual reality and augmented reality tools are also used for training, such as an interface providing data monitoring, along with smartphone apps that can be used for nudging workers towards safer and healthier behaviours. Other web-based systems include monitoring software products, ICT-based applications and e-tools that can assist in the event of accidents or critical situations at work.

These new systems use digital technologies to collect and analyse data or signals in order to identify and assess OSH risks, thereby preventing or minimising harm and promoting OSH. Different types of technologies are used to identify and assess occupational risks within different sectors and jobs. The risks include, for example, physical (especially artificial optical radiations), ergonomic, psychosocial, chemical and biological risks, and risk of accidents.

Several positive effects on OSH can be expected:

- improved compliance in OSH (e.g. by providing real-time data on the proper use of PPE);
- better-informed decisions;
- effective enforcement through the identification of risks at aggregated level; and
- more training opportunities in a virtual reality environment.

In addition, there are opportunities to make work more accessible to people with specific work-related needs (ageing workforce, workers with specific health conditions) and to improve the well-being of the workforce overall.

These new systems use digital technologies to collect and analyse data or signals in order to identify and assess OSH risks, thereby preventing or minimising harm and promoting OSH.

What is a wearable and what can it be used for?

Wearables are small electronic devices with sensors and computational capacity. Worn on different body parts of the worker, they collect physiological and physical data, such as sleep, movements, heart rate and blood pressure, also related to feelings or emotions. They include smartphones connected to the cloud, smart watches, data glasses and other embedded sensors or tags that allow data to be gathered and fed into other systems that analyse such information.

Used in a number of sectors, including transport, mining and construction, wearable-based systems can detect early signs of physical, muscle and mental fatigue, along with stress, drowsiness and low alertness or impaired decision-making. By collecting data in real time, they allow an accurate assessment to be carried out and can prevent accidents by warning workers. They can detect signs of fatigue through cardiac rhythm, changes in eye and head movements, inconsistent steering and braking (for drivers). They can produce personal fatigue scores and predict when workers are at risk, providing indications to design prevention measures. They can also increase workers' awareness of changes in their surroundings or communicate instructions, and geotrack workers in the event of emergencies.

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Although the purpose of these digital systems and technologies is to improve OSH, they also bring a number of risks and challenges mostly stemming from the fact that the data they collect may sometimes be inaccurate, limited or could contain mistakes. In addition, workers may begin to over-rely on such technology that may be faulty at times, increasing the risk of accidents instead of reducing it. On the other hand, workers may feel they are losing control over the tasks they carry out.

Major challenges may also be related to the (mis)use and (mis)interpretation of collected data, which can result in erroneous conclusions that can in turn have implications when data are used to design interventions or preventive measures. Moreover, the availability of standards in this area is minimal.

To address issues arising from the deployment of these systems and technologies to improve OSH in the workplace, it is important to involve workers and their representatives. This should not only take place at the design stage, but also during the implementation and use of

these systems and technologies. This will increase worker buy-in and ensure compliance with existing regulations. In turn, the safe use of these systems will benefit OSH in the workplace and protect workers from negative consequences.

For the implementation of these new OSH monitoring systems in the workplace to be successful, it is important to:

- consider from the early design stage what the potential positive and negative impacts of the adoption of new OSH monitoring systems may be;
- be transparent about how the data are used, who can access them and who owns them, and ensure robust data security;
- ensure that the design and implementation respect the human-in-command principle;
- invite workers and their representatives to participate in the design and implementation of the systems; and
- ensure that new systems have a positive impact in terms of health and safety risks of all types.

Case study

Integrated approach to the assessment and management of ergonomic risk in industrial laundries

Servizi Italia Spa,[39] operating in the field of laundry services and sterilisation of surgical instruments, carried out an assessment of ergonomic risk factors among its workers. Its focus was on the main activities, such as the lifting and loading of washing bags, manual sorting and operation of the trouser press. These activities include repetitive movements, awkward postures, use of force and manual handling of loads.

The company used smart technology for the assessment, developed by the ErgoCert. Wearable sensors collected movement data through inertial measurement units (IMUs) for a computerised analysis of movement and posture. Specifically, the software made it possible to investigate factors such as frequencies and awkward postures of the upper limbs, lumbar and cervical spine, as well as the vertical and horizontal position of the hands.

The results showed the risk indices could be significantly improved. Evidence from the instrumental evaluations (video and IMU quantitative data) was presented in an overview dashboard and shared with the company's worker safety representatives and occupational physician to ensure risk management and prevention.

The study resulted in ergonomic interventions (technical, organisational and training) to improve the musculoskeletal health of workers. These interventions aimed to reduce the stress on workers' shoulders during sorting and limit the amount of bending, twisting and stretching required, as well as the strain on the hands and wrists.

The benefits have been objectively documented by the data recorded through the IMU and computerised analysis of movement and posture.

4. How to get involved in the campaign

Nothing compares to the power of campaigns to raise awareness of OSH topics. The campaign is the largest of its kind and is organised under the slogan 'Safety and health at work is everyone's concern. It's good for you. It's good for business.'

From the campaign launch to the final summit, EU-OSHA brings together national focal points, social partners and other key stakeholders, including companies and organisations from all over Europe.

- Check out the results of our previous Healthy Workplaces Campaigns at https://healthy-workplaces.osha.europa.eu/en/previous-campaigns. You will find information from the first campaign launched in 2000 to our latest flagship awareness-raising activity.

4.1. Who should take part?

Considering all the challenges, risks and opportunities, the main aim of the campaign is to raise general OSH awareness among workers, businesses, policy and decision-makers, and other actors and stakeholders. EU-OSHA calls on the OSH research and technical community, software and industrial designers and start-up communities in particular to join this campaign. Everyone counts!

4.2. Our network of partners

Our partnerships with key stakeholders are instrumental in a successful campaign. We rely on the support of a number of partnership networks.

- National focal points: coordinate all Healthy Workplaces Campaigns at the national level.
- **European social partners:** represent the interests of workers and employers at the European level.
- Official campaign partners: support the campaign (100 pan-European and international enterprises and organisations).
- Media partners: EU-OSHA is supported by an exclusive pool of journalists and editors across Europe who are interested in promoting OSH.
- Enterprise Europe Network (EEN): supports small and medium-sized enterprises and has a network of national-level OSH ambassadors in over 20 countries, who play an active role in promoting the campaign.

- OSHVET partners: Ambassadors in vocational education and training (VET) coordinate and promote project activities among their networks and national vocational education centres.
- EU institutions and their networks: in particular the holders of the presidencies of the European Council.

Why not join us as an official campaign partner?

Are you an international or European organisation or company with representation and/or network members in several Member States and willing to get substantially involved in the campaign? Then check out our current Healthy Workplaces Campaign partnership offer!

In return for spreading the campaign's messages and supporting it in practical ways, our partners benefit from publicity on the campaign website and the chance to take part in Good Practice Exchange events and other networking opportunities.

Media partnership

Media partners comprise an exclusive pool of journalists interested in promoting OSH, and in particular the Healthy Workplaces Campaigns.

Partnership is reserved for media outlets or

publications willing to become significantly involved. By doing so, they gain recognition for their publication as one of the official EU-OSHA media partners and as an organisation dedicated to OSH.

4.3. Ways of supporting the campaign

- Organise events and activities, such as workshops and seminars, training courses and competitions, especially around the European Weeks for Safety and Health at Work.
- Raise awareness using the campaign materials.
- Share good practices among your networks.
- Take part in the Healthy Workplaces Good Practice Awards.
- Engage in social media promotional activities.
- Become an official campaign partner or media partner.

European Week for Safety and Health at Work

Conferences, exhibitions, competitions, training sessions, film screenings and social media events are among the activities taking place each year at the end of October to celebrate the European Week for Safety and Health at Work. Discover more about what is

happening near you from your national focal point, which may also be able to help you organise an activity.

http://healthy-workplaces.osha.europa.eu/en/get-involved/european-week

4.4. The Healthy Workplaces Good Practice Awards

A growing number of companies from many industry sectors all over Europe have been making the most of digital technologies while managing and preventing risks. The Healthy Workplaces Good Practice Awards are an opportunity to recognise their efforts.

Organised by EU-OSHA in cooperation with Member States since 2000, the awards recognise the outstanding and innovative contributions to managing OSH. In doing so, they demonstrate the benefits of good safety and health in the workplace.

The beginning of the Good Practice Awards competition coincides with the official campaign launch in October 2023. The winners will be announced at an awards ceremony held in 2025.

As with all previous competitions, the awarded and commended examples of good practice will be promoted across Europe. Their approaches will serve as a source of inspiration for other organisations.

Organisations and companies based in any Member State or candidate country, potential candidate country or member of the European Free Trade Association (EFTA) are welcome to participate. EU-OSHA's network of focal points will collect entries and nominate national winners for entry to the pan-European competition.

Visit our page on the Good Practice Awards (https://healthy-workplaces.osha.europa.eu/en/get-involved/good-practice-awards) and discover how to participate, check the national deadlines and see examples of good practices that have been awarded in previous years.

Campaign newsletter

Stay in the loop. Subscribe to the newsletter for exclusive, front-row access to the information and resources you need to get involved in the campaign. Sign up now at the campaign website.

Social media

It has never been easier to stay up to date with our activities and events. Check out the campaign website (www.healthy-workplaces.eu) and our social media outlets – find us on Facebook, Twitter and LinkedIn.

Make use of the social media kit – a collection of material for your social media accounts. Get started by selecting from the ready-made messages and accompanied visuals and videos.

Follow the campaign on social media:

#EUhealthyworkplaces

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EU-OSHA contributes to making Europe a safer, healthier and more productive place to work. Set up by the European Union in 1994 and based in Bilbao, Spain, the agency researches, develops and distributes reliable, balanced and impartial safety and health information, while networking with organisations across Europe to improve working conditions.

EU-OSHA also runs **Healthy Workplaces Campaigns**, backed by the EU institutions and the European social partners and coordinated at the national level by the agency's network of focal points. The 2023–2025 campaign '**Safe and healthy work in the digital age**' aims to raise awareness about the impact of new digital technologies on work and workplaces and the associated occupational safety and health challenges and opportunities.

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