



Artificial Intelligence and Automation of Tasks

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BEEYONDERS project workshop

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- EU-OSHA: “We work to make European workplaces safer, healthier and more productive — for the benefit of businesses, employees and governments.”

Research projects



Surveys

Campaigns



Healthy Workplaces

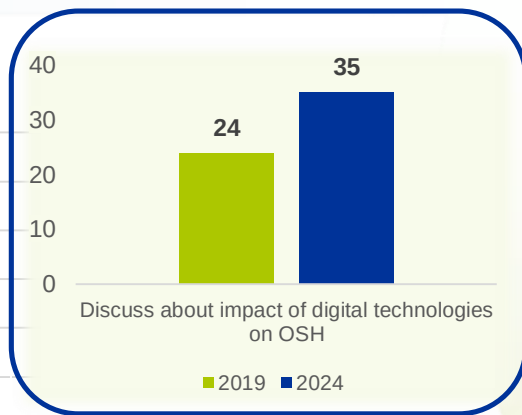
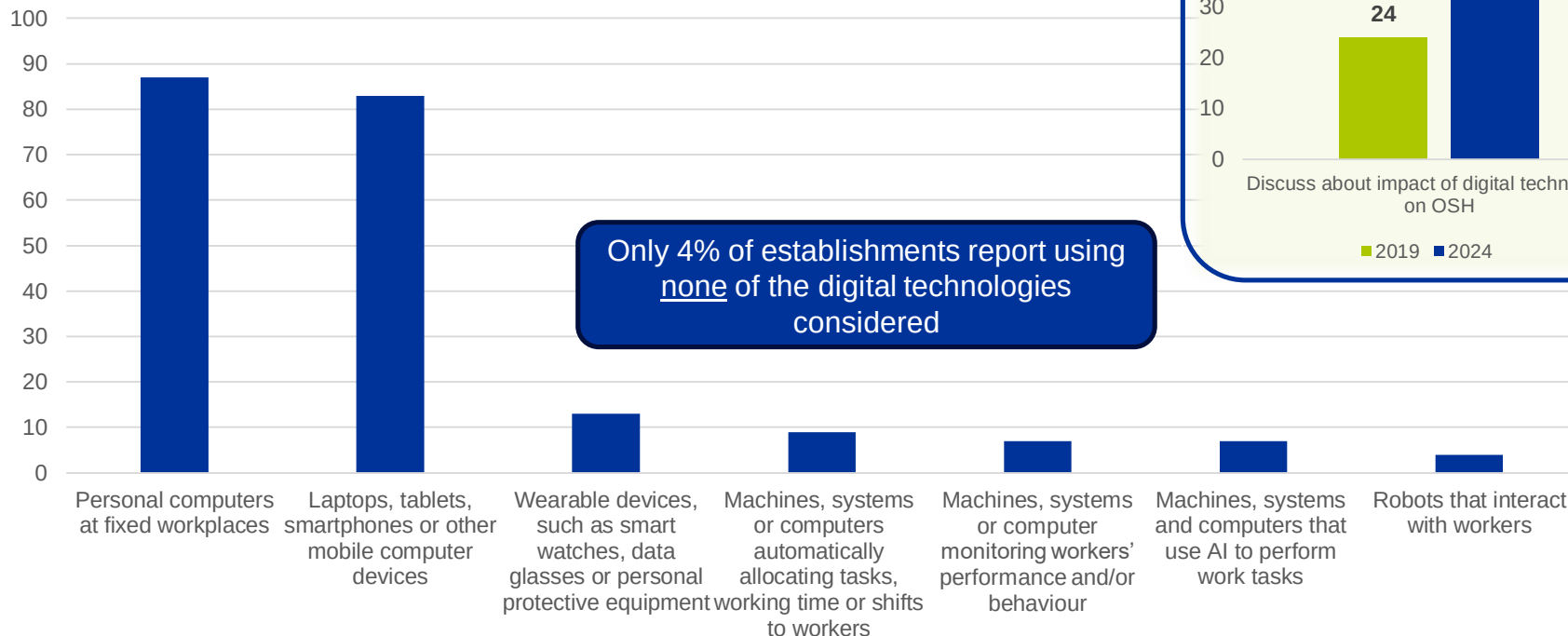
E^{SENER}



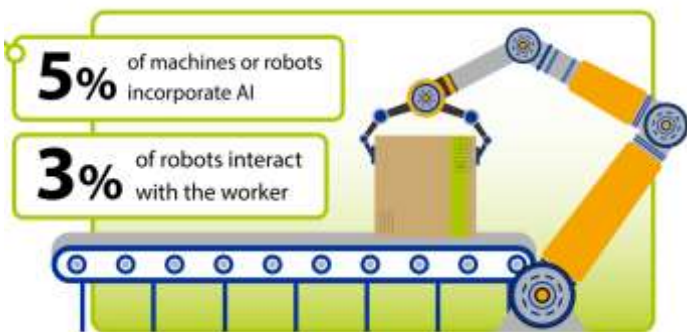
Tools / guides

Uptake of digital technologies in establishments in the EU (%)

ESENER 2024 (EU-27)

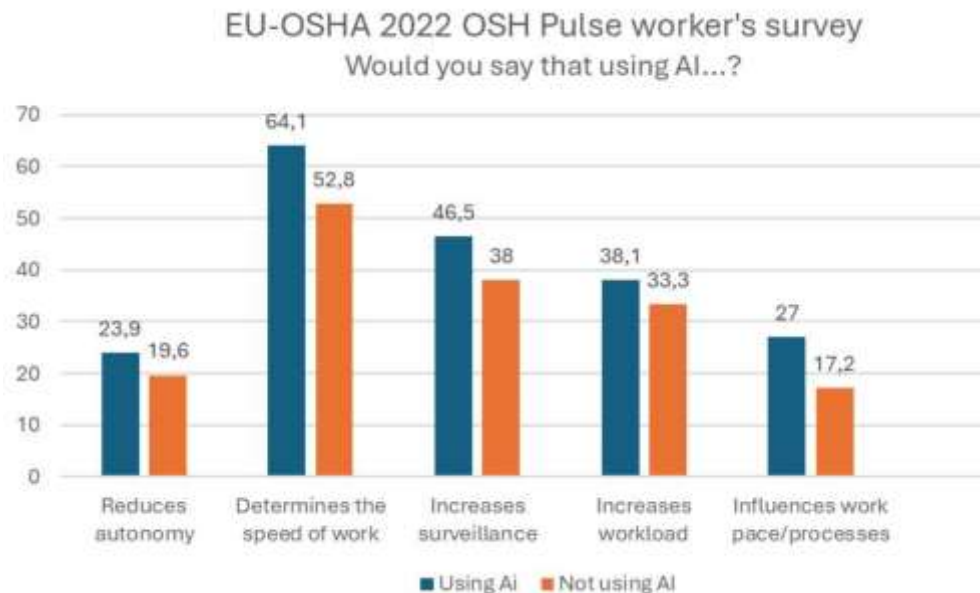


Facts and figures



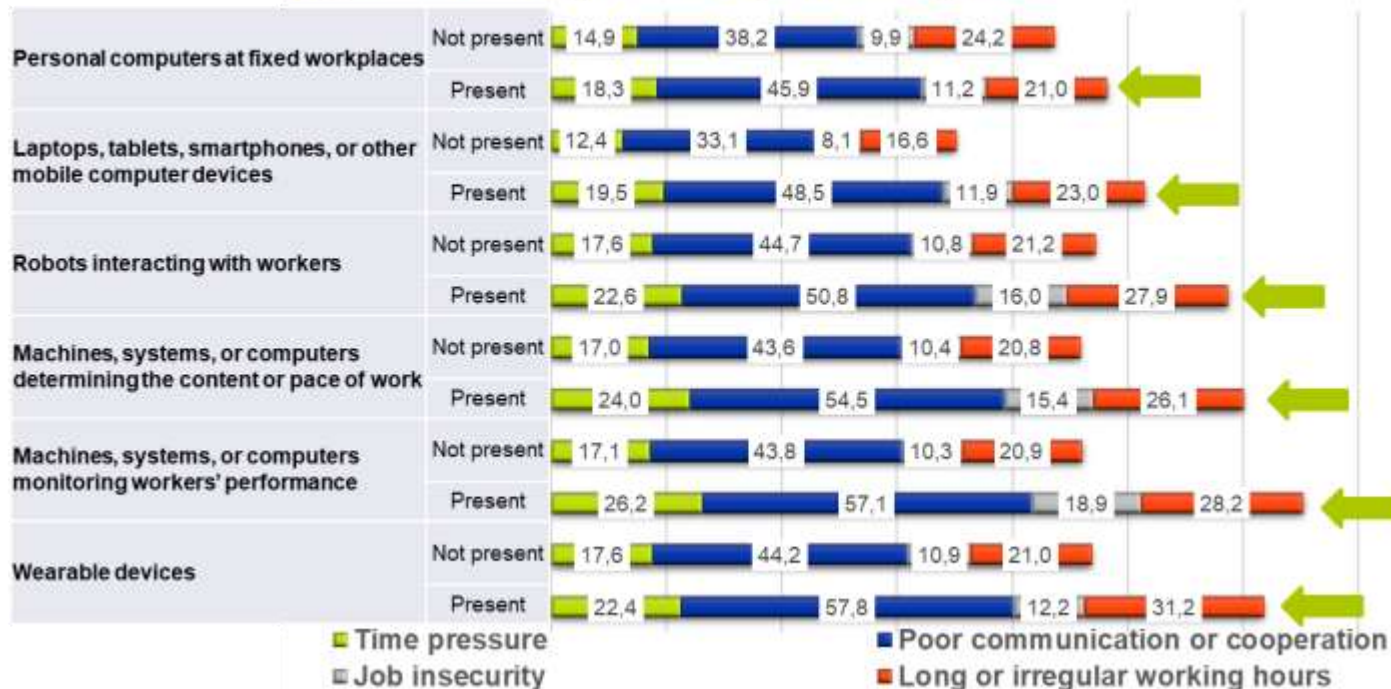
Source: ESENER 2019 and OSH Pulse 2022

- Robot adoption in factories around the world : The new global average robot density reaches a record 162 units per 10,000 employees in 2023 – (74 units in 2016). Source: International Federation of Robotics (IFR).
- **Europe's Auto Industry Installed 23,000 new Robots (IFR) in 2023**



EU-OSHA, ESENER 2019

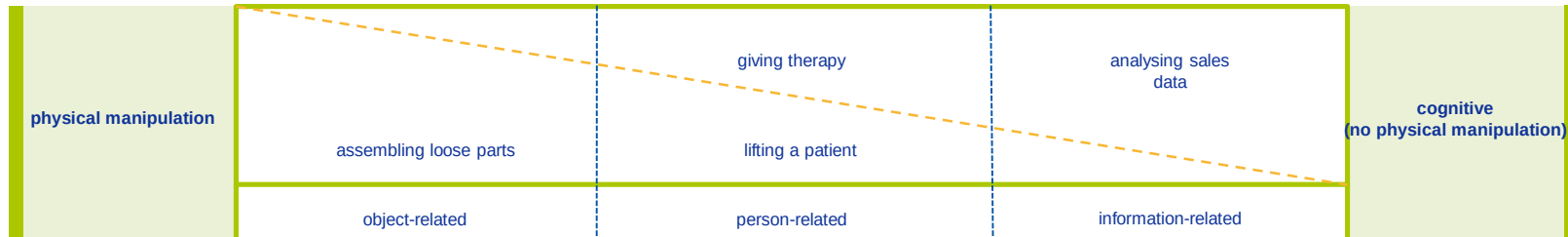
Workplaces reporting psychosocial risks by presence of digital technology, EU27



Task approach to automation

'Tasks are a better unit of analysis when investigating the impact of automation potential. The task approach allows a more nuanced and detailed understanding of which specific aspects of human work can be more easily automated.'

(Bisello et al., 2019, p. 3)



Taxonomy

Backend (software)	complex, not AI-based	AI-based
Frontend (device)	physical manipulation / action: advanced robotics	no physical manipulation / action: smart ICT
Type of task	physical information- related person-related object-related cognitive	
Task characteristics	routine non-routine	
(semi-) Automation of tasks	assistance substitution	
OSH dimension	physical and /or psychosocial organisational	

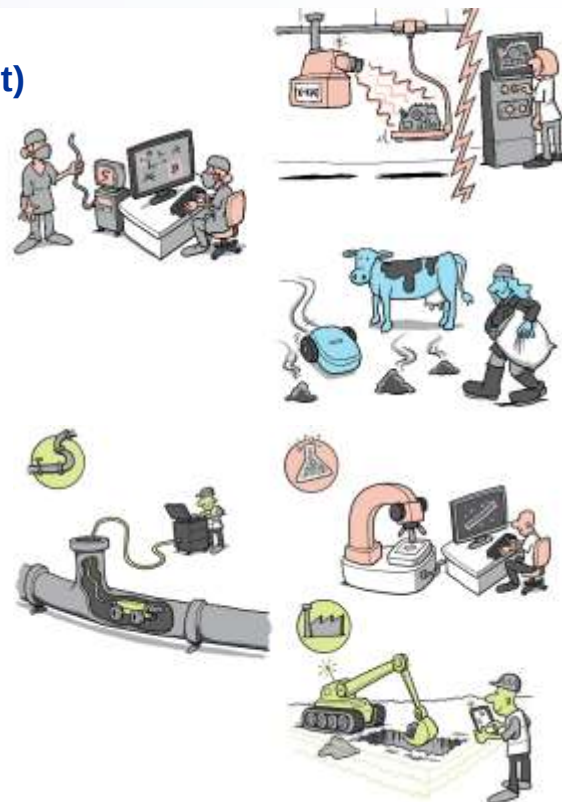
Automation systems in practice

■ Sectors implementing task automation (non-exhaustive list)

- Manufacturing
- Transportation and storage
- Human health and social work activities
- Professional, scientific and technical activities
- Construction

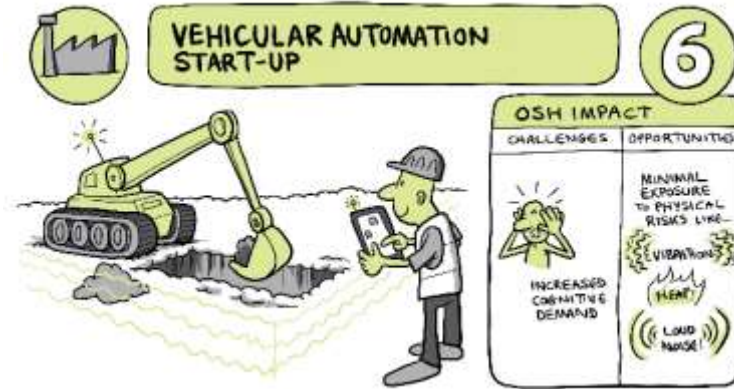
■ Examples of automated tasks

- Assembly
- Lifting of objects
- Autonomous guided vehicles moving material
- Autonomous cleaning and disinfection
- Video and image analysis program for medical diagnosis
- Inspection and maintenance of infrastructure
- Visual detection and recognition of objects
- Worksite inspection for risks, forgotten objects or work parts



Vehicular automation

- Software and hardware to **automate construction equipment**, such as excavators.
- Trenching for oil and gas pipelines, renewable energy construction sites, agriculture, etc.
- **The system can trench in two modes: fully autonomously or with a human operator still inside, supervising the process**
- **Geo-fencing and digital safety barriers around the system**



- *Physical workload and health*
- *Accident prevention*
- *Reduce strain of repetitive task*
- *Up-skilling*
- *Attract new workers*

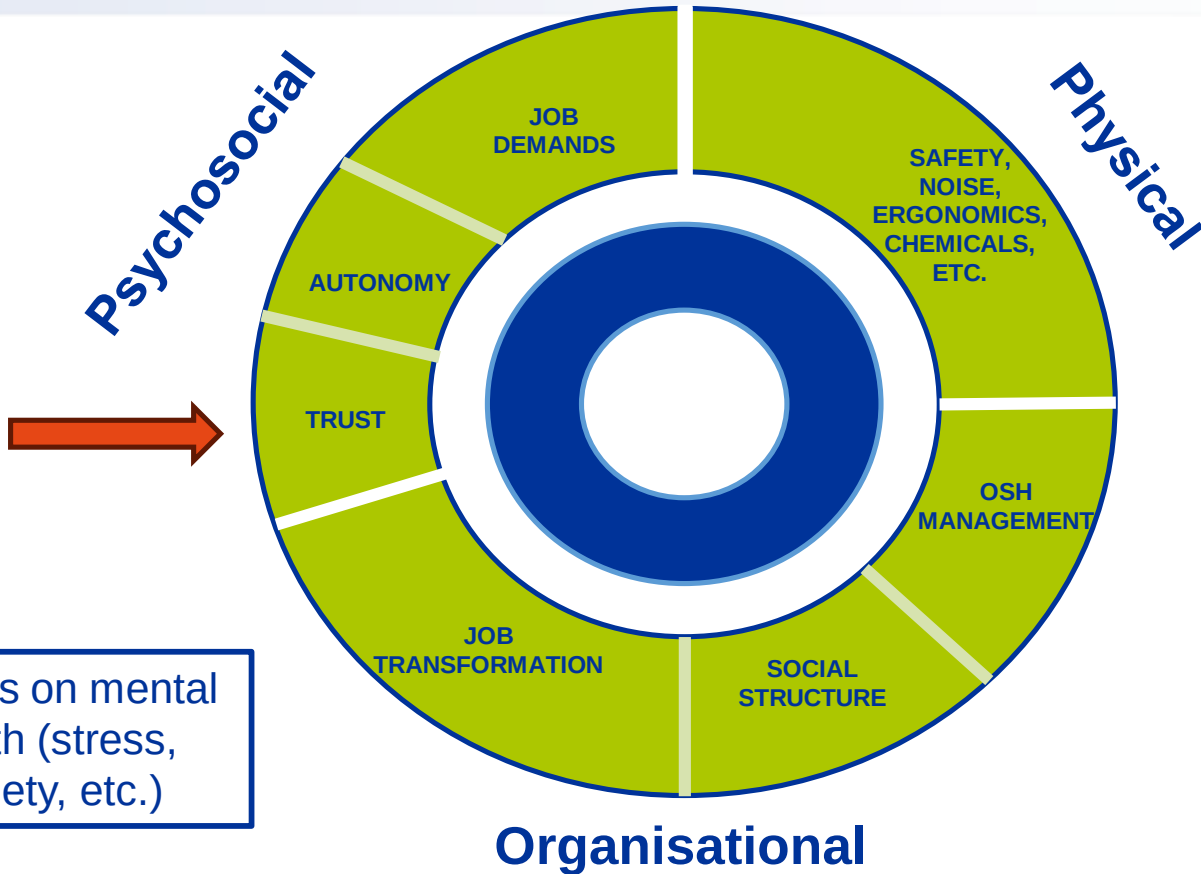
- *Mental workload*
- *Up-skilling*
- *Fear of job-loss*
- *Cybersecurity*



Drones inspecting worksites of gas infrastructure



OSH opportunities, risks and challenges

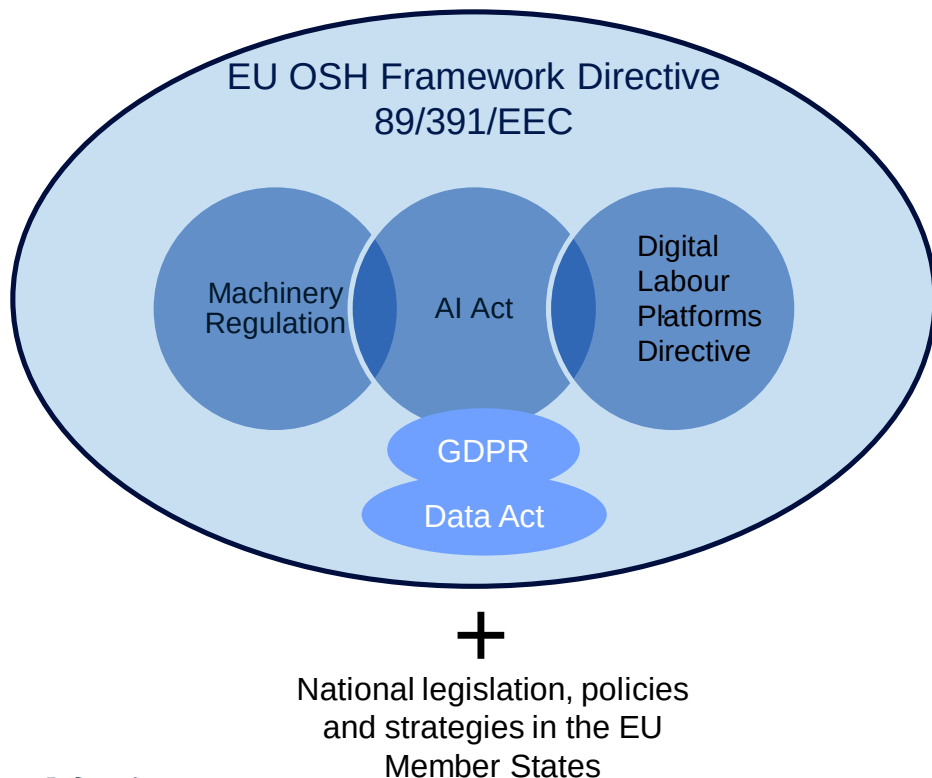


Impacts on mental health (stress, anxiety, etc.)

Impact for different levels and actors



The Role of Regulation



- **Safety and Accountability**

Regulations ensure safety and accountability in automation by defining clear guidelines and legal requirements.

- **Key Regulatory Frameworks**

Important frameworks like the EU AI Act and Machinery Directive cover safety, ethics, and operational standards.

- **Transparency and Human Oversight**

The EU AI Act promotes transparency and human control to make AI decisions explainable and accountable.

- **Building Trust and Innovation**

Regulations build trust among stakeholders and facilitate sustainable innovation in technology deployment.

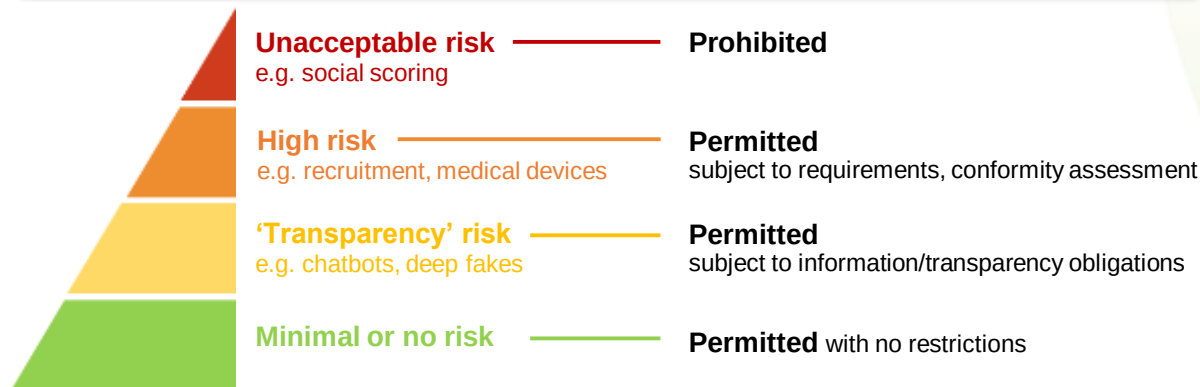
AI Act provides legal certainty and is innovation friendly

General-purpose AI models

Transparency rules
for all models

Risk management
in case of systemic risk

AI systems



Along the value chain from general-purpose AI models to application in specific use cases, the AI Act increases user trust and gives legal certainty – supporting AI uptake.

Key pointers for OSH prevention

A human-centred approach with humans in-command

- ✓ **Prevention-through-design**
- ✓ **Selection of tasks and processes** to be digitalised/automated
- ✓ **Workers' job control and autonomy**
- ✓ **OSH policy and OSH management system**
- ✓ **Workplace Risk Assessment** (EU-OSHA OiRA tools on Telework & Automation)
- ✓ **Training and upskilling**
- ✓ **Equal access to information, transparency**
- ✓ **Worker consultation and participation**
- ✓ **Raise awareness for psychosocial risks & mental health**
- ✓ **Regulation & enforcement** (Senior Labour Inspectorate Committee's Paper on Robotics using AI)
- ✓ **Exchange of expertise** (EU-OSHA Case studies & Good practices)



Thank you for your attention!

More on Digitalisation and OSH at:
<https://osha.europa.eu/en/themes/digitalisation-work>

EU-OSHA campaign website:
<https://healthy-workplaces.osha.europa.eu/en>



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