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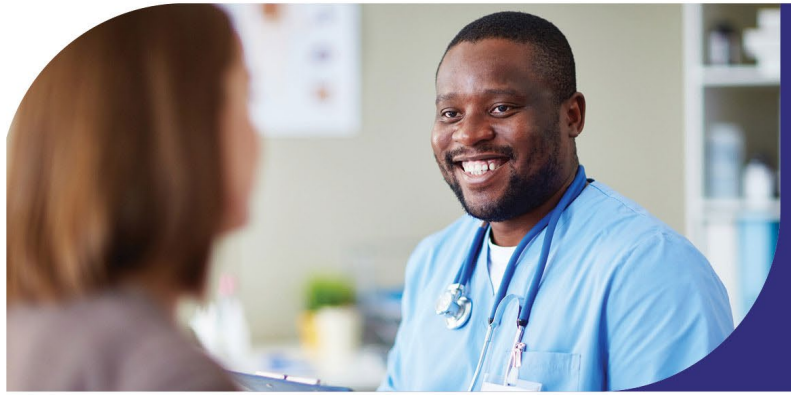
Welcome



HSA Seminar – Navigating the Human Impact of Digital Transformation

Monday, 20 October | Gibson Hotel, Dublin

Healthy Workplaces Campaign 2023-25
Safe and Healthy Work in the Digital Age

HSA

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Health and Safety Authority

Aoife Sweeney, Programme Manager, HSA - Conference Chairperson

European Agency for Safety and Health at Work

Healthy Workplaces

Safe and healthy work in the digital era

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- **Digitalisation of workplace presents opportunities:**

- 63% of workplaces note the **flexibility** this provide for employees.

- **Digital technologies contributing to healthy workplaces**: monitoring the presence of noise, chemicals, dust and gases, therefore reducing workers' exposure to hazardous situations.

- **Improved access to labour market** for people from disadvantageous background.

Safe and healthy work in the digital era

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- **But, digitalisation of workplace presents challenges and risks:**

- 1/3 (33%) of workers find that the use of digital technologies has contributed to **an increase of workload**.
- 37 % find an **increased surveillance** from their work.
- **Use of digital technologies is linked to psychosocial risks**. E.g. time pressure, poor communication, job insecurity, irregular working patterns.

Key priority areas

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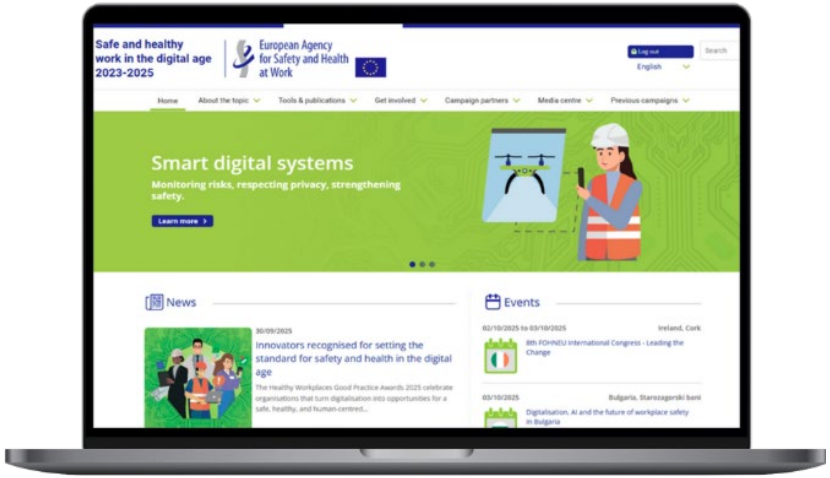
1. Digital platform work
2. Automation of tasks
3. Remote and hybrid work
4. Worker management through AI
5. Smart digital systems

Risk prevention

- Human-centred approach
- Equal access to information of all stakeholders
- Worker consultation/participation in the development, implementation and use of digital technologies and systems
- Transparency about the way a digital tool operates
- Holistic approach to evaluating digital technologies and systems

Tools, information and guidance

- **All information and updates on the Healthy Workplaces Campaign can be found on its dedicated website.**



https://healthy-workplaces.osha.europa.eu/en

Slido

1. Does your organisation see the rapid increase of digitalisation as an opportunity, a threat or a mix of both?
2. Is increased digitalisation currently part of your health and safety policy?
3. Would you trust an AI system to make safety-critical decisions?

Leading Transformational Change in the Digital Age

Health and Safety Authority

Introduction

Tim Bergin

EY Ireland People Consulting Partner

02

Generative AI

What is Generative AI

Artificial intelligence

AI, or artificial intelligence, is a field of computer science that focuses on creating intelligent machines capable of tasks requiring human intelligence.

Machine learning

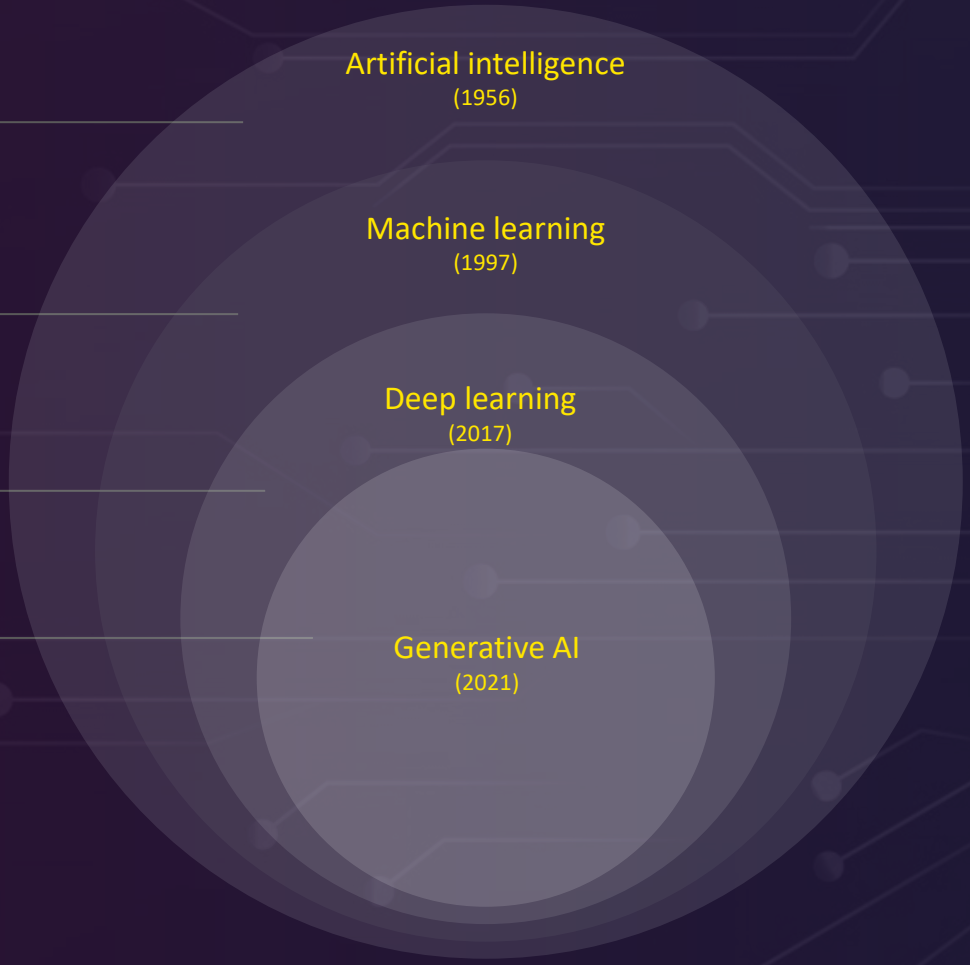
Machine learning is a subfield of AI, which is broadly defined as the capability of a machine to imitate intelligent human behavior.

Deep learning

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers.

Generative AI

Generative AI is a type of AI that can create new content, such as images, text, audio or video, based on the data it has been trained on using techniques like large language models, transformer neural networks and generative adversarial networks.



ey.ai unifying platform | Microsoft | servicenow | SAP SuccessFactors | IBM | eightfold.ai | Reejig | qualtrics XM

Why now?

Increasing adoption of digitization, cloud and big data are rapidly accelerating the advancement of Generative AI

- Automation and efficiency – GenAI can automate repetitive tasks, saving time and reducing costs.
- Personalization and employee experience – AI can personalize services and experiences to help improve employee engagement and gain competitive edge.
- Innovation and creativity – Generative AI can unlock new levels innovation in generating new contents for policies, processes, training and change.
- Data analytics – AI can analyze large amounts of data, uncovering patterns and insights that humans may miss. This helps businesses make informed decisions and gain a competitive edge.

64%

Of people struggle with having the time and energy to do their job

62%

Of people spend too much time searching for information during the workday

60%

Of leaders say a lack of innovation or breakthrough ideas is a concern

82%

Of leaders say employees will need new skills to be prepared for the growth of AI

76%

Of people would be comfortable using AI for admin tasks

2x

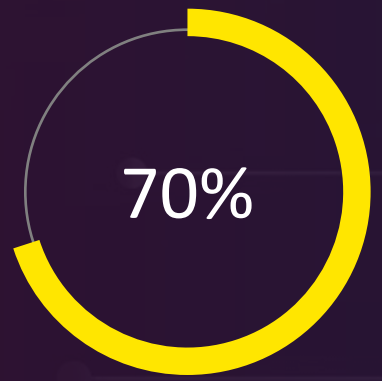
Leaders are 2x times more interested in using AI to increase productivity than to cut headcount

* Microsoft WorkLab Work Trend Index, May 2023


Can AI enhance what makes work human?

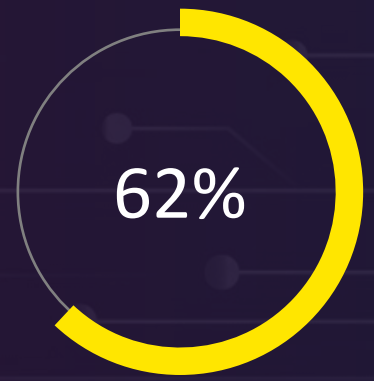
Generative AI in the world of work: the people's perspective

AI will not replace humans; people effectively utilising AI will replace humans who don't.



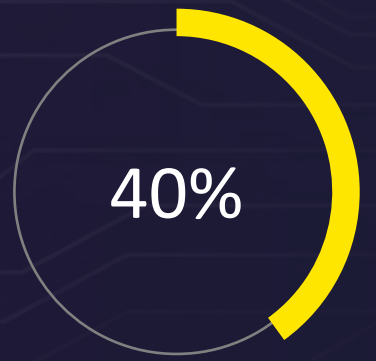
AI with humans@centre

70% of digital transformation programmes fail because of the lack of human-centric approach, failing to consider the employees' needs, perspective and experience.



AI perception

62% of surveyed employees are worried about the potential biases and lack of transparency in AI-driven decision-making in the workplace and if GenAI will improve meritocracy.

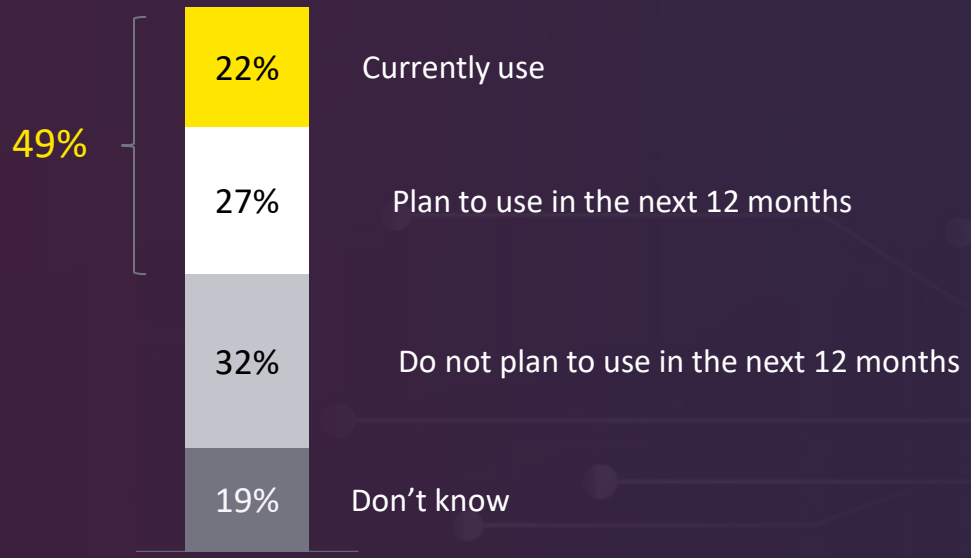


AI upskilling

Executives surveyed estimate that 40% of their workforce will need to reskill as a result of implementing AI-enabled solutions over the next 3 years.

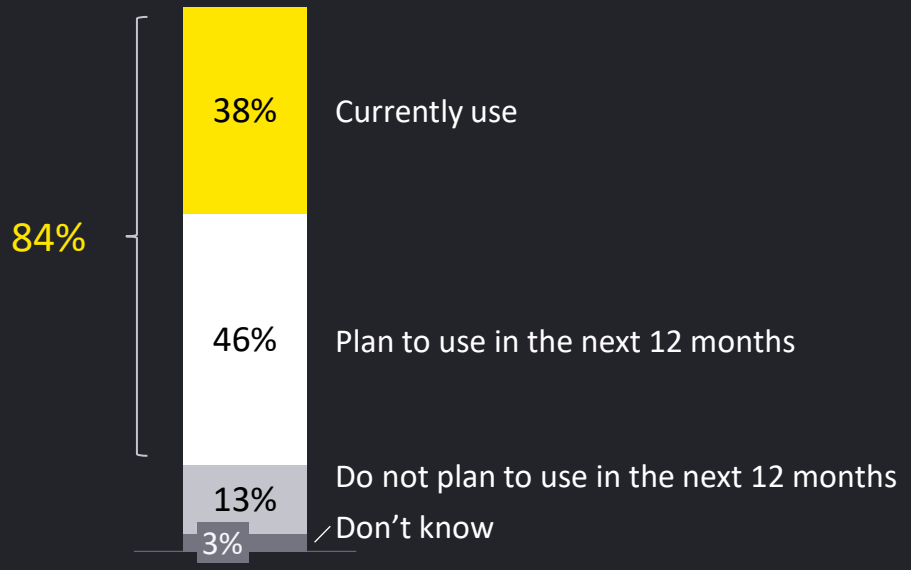
Generative AI in the world of work: the people vs employer's expectation

Employee use of generative AI at work



73% employees from Technology, Media and Telecommunications (TMT) vs. only 31% employees in Government and Public Sector currently or plan to use in next 12 months

Employer use of generative AI at work



91% employers from Technology, Media and Telecommunications (TMT) vs. only 62% employers in Government and Public Sector currently or plan to use in next 12 months

Your people are the pivot point

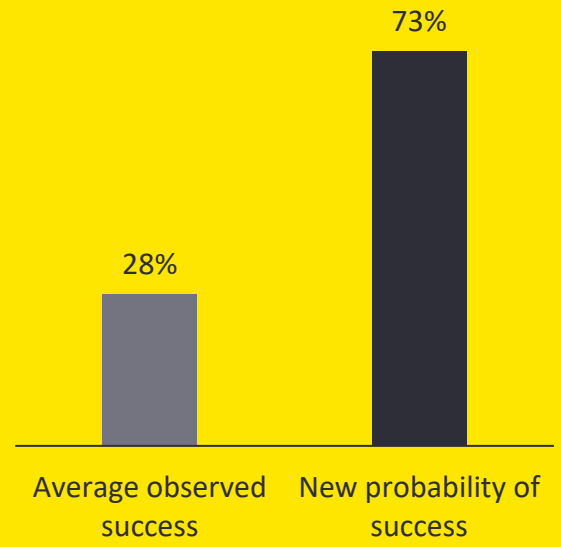
In collaboration with Oxford Saïd Business School,
we conducted ground-breaking research into the human factors that drive transformation success and failure.

- We discovered that both leaders and workers of transforming organizations undergo emotional journeys, taking very different turns depending on success or failure, the latter with devastating consequences.
- We identified six key drivers, which, when combined, help prepare for and manage these emotional journeys, and are the formula for dramatically increased success rates for transformations.
- These insights have helped us define a fundamentally new and better way to drive sustained organizational performance in this new normal of constant transformation.
- In it, humans are not a workstream, but the focal point.

Organizations that put humans@center of their transformations are

2.6x

more likely to be successful than those who do not.



Shift in success

Leading through digital transformation successfully – **6 key behaviours**

01 To Inspire

- Don’t wait for the burning platform; be the fire.
- Communicate the ‘why’ and galvanize the movement

03 To Build

- Make the change real quickly and work with people to understand what it means for them.
- Invest in your people to develop required mindsets and skills to navigate change.

05 To Lead

- Start by transforming yourself, demonstrating that you own the change.
- Have the courage to lead through change, understanding that transformation will surface fear and anxiety.
- Create a culture of accountability, emphasizing the role that each person plays in driving transformation.

02 To Care

- Create realistic expectations upfront and normalize the anticipated challenges.
- Prepare the workforce to weather the storm, manage the stress of change and lead with positivity.

04 To Empower

- Create autonomy for the organization to get involved in defining the future state and executing on new ways of working.
- Incentivize the shift, accepting that the pace of progress will ebb and flow.

06 To Collaborate

- Be deliberate in shifting to new ways of working.
- Drive collaboration across teams to avoid silos to acknowledge the interdependent roles that teams play in wholescale transformation.

10

03

Practical Applications of Generative AI


Can AI enhance what makes work human?

What specific work patterns should you target to release value?

As well as considering potential target audiences it is vital to consider work patterns which are similar or different across audiences and personas, based on the nature of the work that is being undertaken. This allows for value to be identified and quantified in the early stages.

Sample Work Patterns

Content Generation
Gen AI can create, summarize, comprehend, refine, and elevate documents.

Analysis & Decision-Making
Gen AI can help analyze, visualize and explore data.

Content Transformation
Gen AI can transform existing documents into presentations with speaker notes

Ideation & Research
Gen AI assists with brainstorming and generate new ideas for products, suggest new features, names, etc.

Repurposing
Gen AI can reuse existing documents, unlocking the knowledge in content created in the past.

Customer Service
Gen AI can be used to provide real time AI assistance to answer questions, resolve concerns and issues, etc.

Administration
Gen AI supports tasks like note taking, meeting management, scheduling, drafting of emails

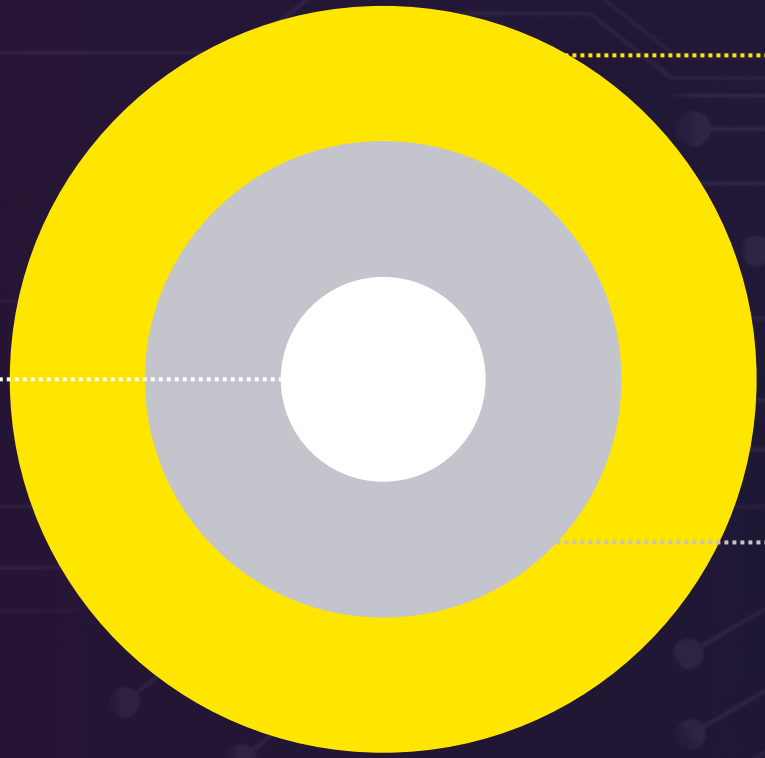
Where should we focus to deliver real value?

Individual

How do I fit in?

How does work fit into my life?

- Wellbeing
- Ability
- Capacity
- Skills
- Knowledge



Organisation

How do we operate?

- Culture
- Equity
- Customers & Community
- Decision Making & Metrics
- Operating Model
- Mobility & Immigration
- Technology & Data
- Total Rewards
- Workplaces & spaces
- Process & Policy
- Risk & Security
- Suppliers & Stakeholders

Team

How do we connect and team?

- Recognition
- Performance & Feedback
- Representation & Inclusion
- Talent Management
- Connection & Collaboration
- Vision & Purpose
- Governance
- Leadership

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04

How to identify where Generative AI can add value

Task to Value; identifying opportunities where Generative AI can ease challenges and add value

IDENTIFY TARGET TASKS & WORK PATTERNS

- Undertake qualitative and quantitative research with employees to identify target challenges and pain points
- Agree target work patterns to address pain points
- Decide which stages to prioritise for implementation to ease pain points and add benefit.

DEFINE USE CASES & QUANTIFY VALUE

- Refine use cases and define to-be user stories and needs, that employees would need to achieve to realise value
- Develop value executive summaries highlighting qualitative and quantitative benefits for each of the recommended target areas

DEFINE REQUIREMENTS – TECHNICAL & BEHAVIOURAL

- Create a Blueprint, highlighting the target future ways of working where current prioritised pain points and value opportunities are addressed through use of Gen AI
- Determine technical requirements and validate readiness

LAUNCH IMPLEMENTATION PLAN, SCALE & MONITOR

- Define implementation plans using an indicative four-stage process for each solution
- Assess each use case via a *Task-to-Value Framework*. This approach identifies the relevant Gen AI solution based on the task within the To-Be Ways of Working

What specific work patterns should you target to release value?

As well as considering potential target audiences it is vital to consider work patterns which are similar or different across audiences and personas, based on the nature of the work that is being undertaken. This allows for value to be identified and quantified in the early stages.

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05

Making Gen AI truly transformational

Establishing a lasting people change

Mind-set

Behaviour

Capability

EY | Building a better working world

EY exists to build a better working world, helping to create long-term value for clients, people and society and build trust in the capital markets.

Enabled by data and technology, diverse EY teams in over 150 countries provide trust through assurance and help clients grow, transform and operate.

Working across assurance, consulting, law, strategy, tax and transactions, EY teams ask better questions to find new answers for the complex issues facing our world today.

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European Foundation for the Improvement of Living and Working Conditions

The tripartite EU agency providing knowledge to assist in the development of better social, employment and work-related policies

Digital Technologies in European Workplaces: Key Insights from the European Working Conditions Survey

Sara Riso / Dragos Adascalitei
Eurofound

About this presentation

- **Descriptive statistics**
  - Prevalence of workplace technology use across the EU
  - Initial insights into technology's impact on work
- **Factor analysis**
  - Comparing worker groups by level and type of tech use
  - Linking technology adoption to job quality dimensions
- **Key Issues for discussion**
  - Emerging risks and opportunities from workplace tech
  - Implications for workers, employers, and policymakers

Eurofound 50 1975–2025

EWCS 2024 : Key facts

Editions
1991, 1995, 2000, 2005, 2010, 2015, 2024

32
languages
-
49 lang. versions

36,644
face to face interviews (CAPI) at worker's homes

35
countries

120+
questions

45
minutes

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Seven dimensions of job quality (with subdimensions)

Physical environment
- Physical risks
- Physical demands

Work intensity
- Quantitative demands incl. emotional
- Pace determinants and interdependency

Working time quality
- Atypical working time
- Flexibility
- Working time arrangements
- Predictability

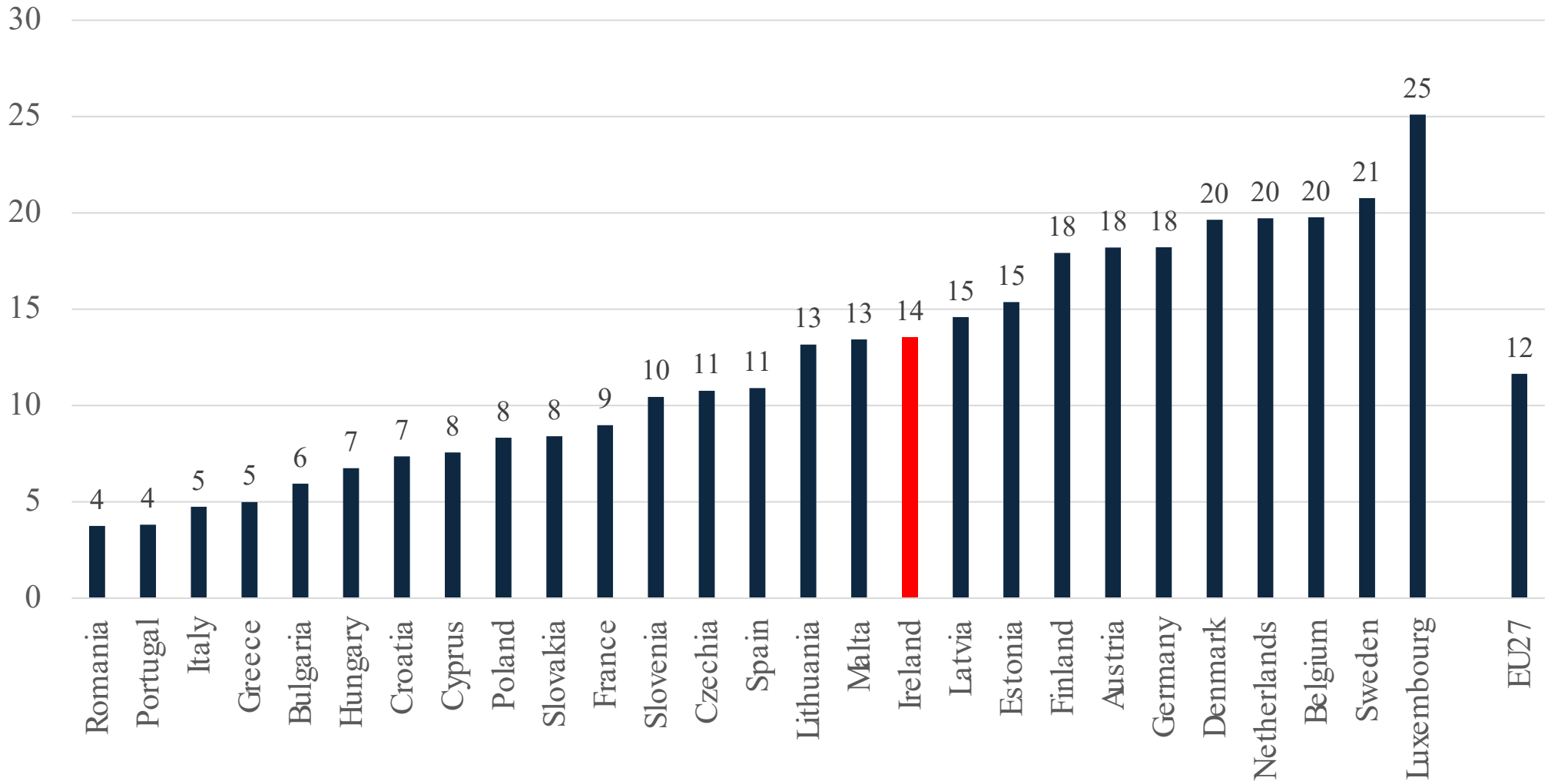
Earnings
- Monthly earnings
- Predictability of earnings
- Fairly paid in relation to efforts

Social environment
- Adverse social behaviour
- discrimination
- Social support
- Management quality

Skills and discretion
- Cognitive dimensions
- Decision latitude
- Organisational participation
- Training

Prospects
- Employment status
- Career prospects
- Job security
- Working conditions prospects

Use of generative AI tools at work



Source: EWCS 2024

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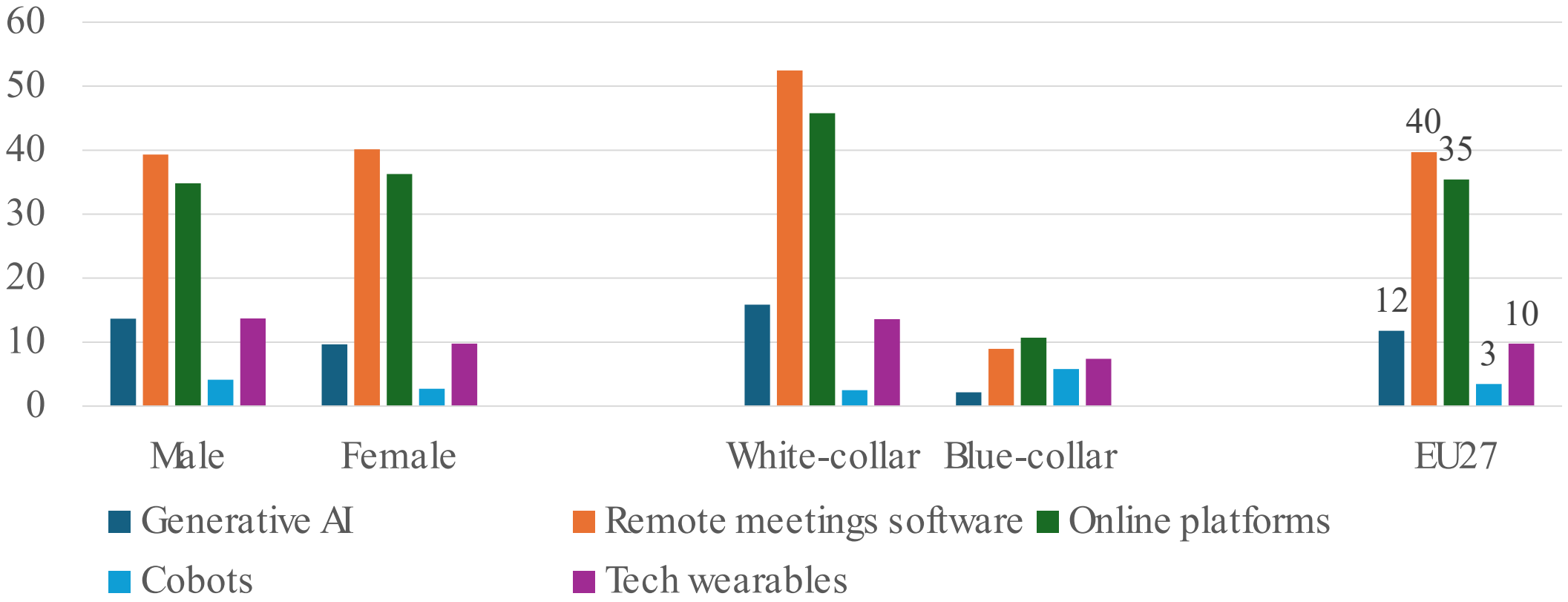
Use of different technologies by gender and broad occupation



Source: EWCS 2024

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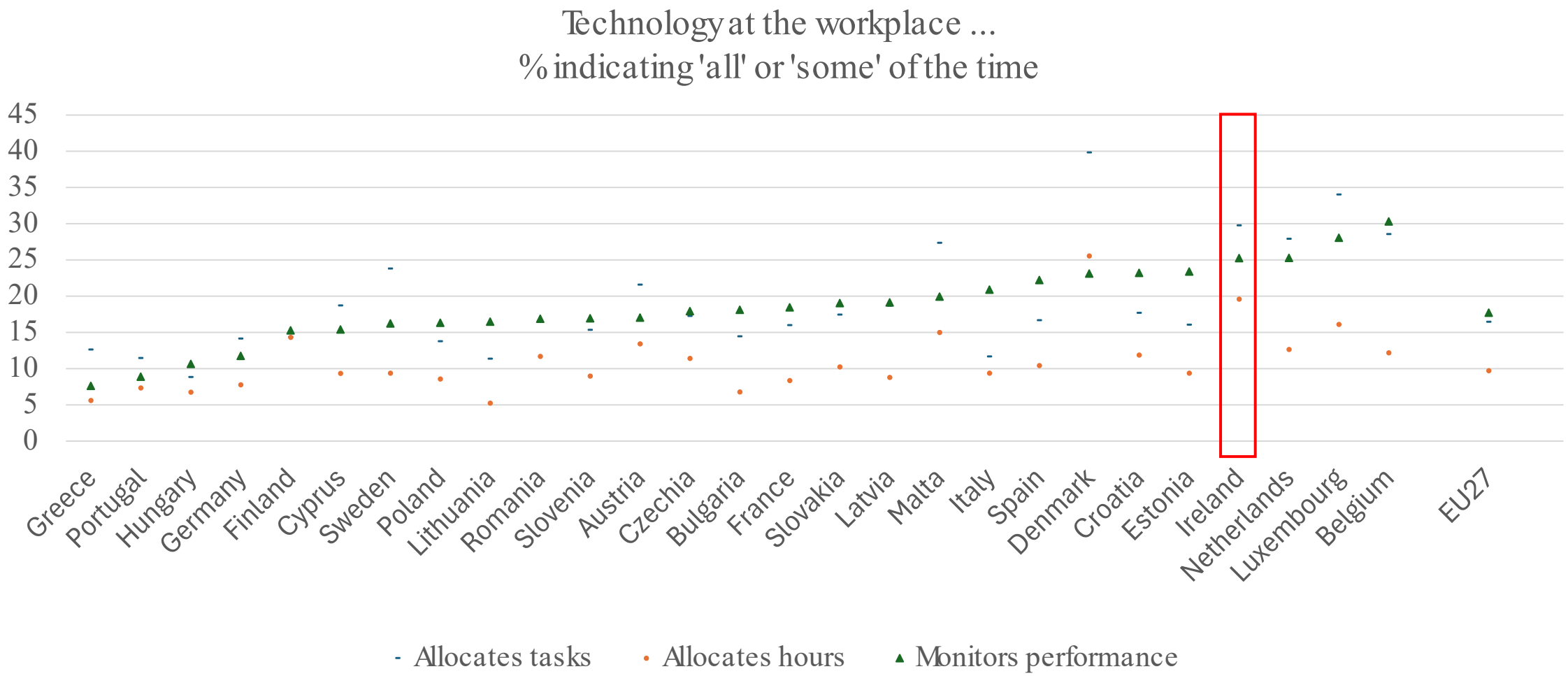
Prevalence of algorithmic management by country



Source: EWCS 2024

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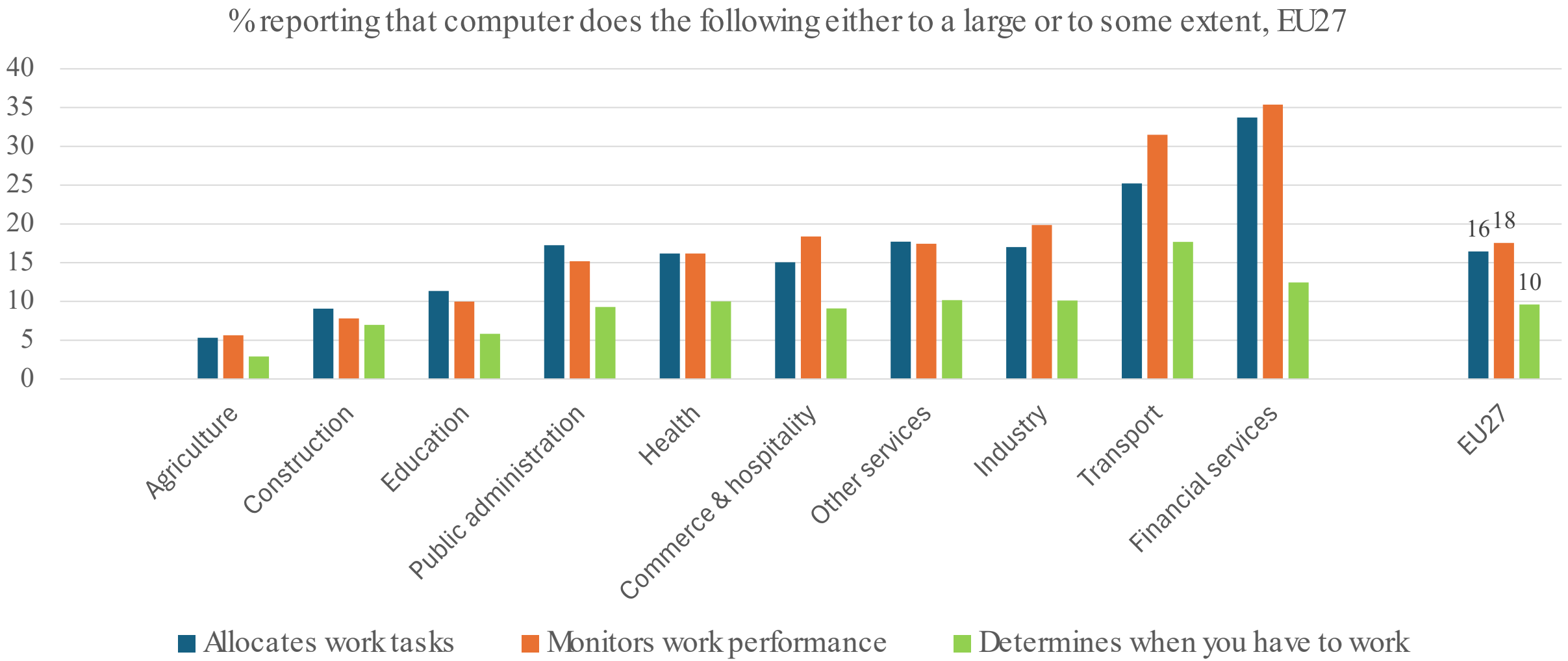
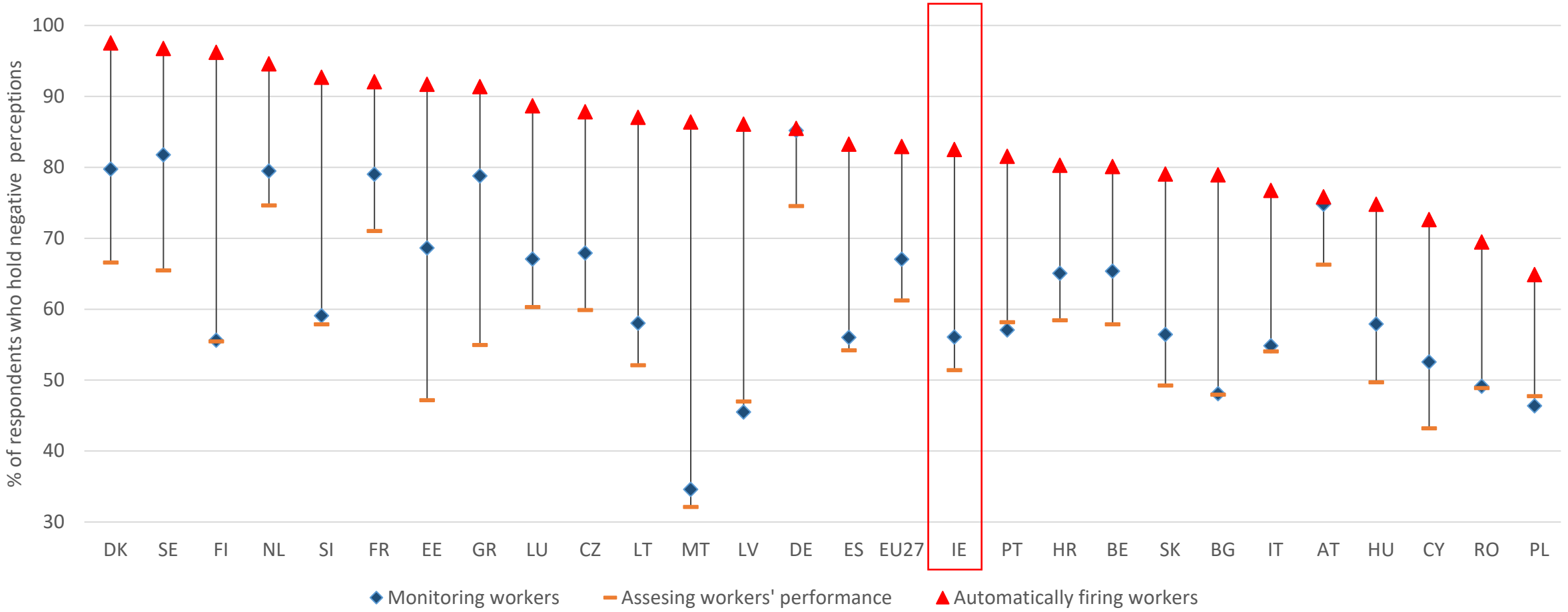
Algorithmic management by sector



Source: EWCS 2024

Negative perceptions about AI for intrusive purposes



Source: Own calculations, Eurobarometer Survey 554

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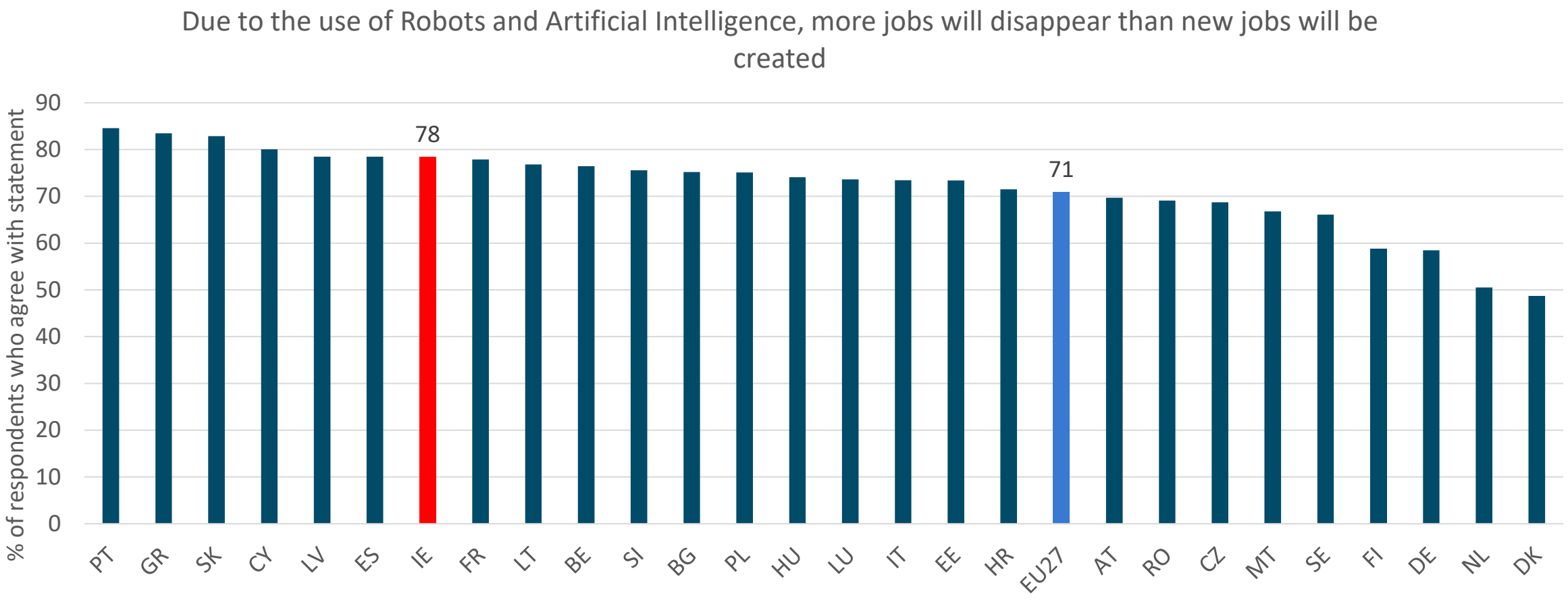
Fears of job loss as a result of robots and AI remain



Source: Own calculations, Eurobarometer Survey 554

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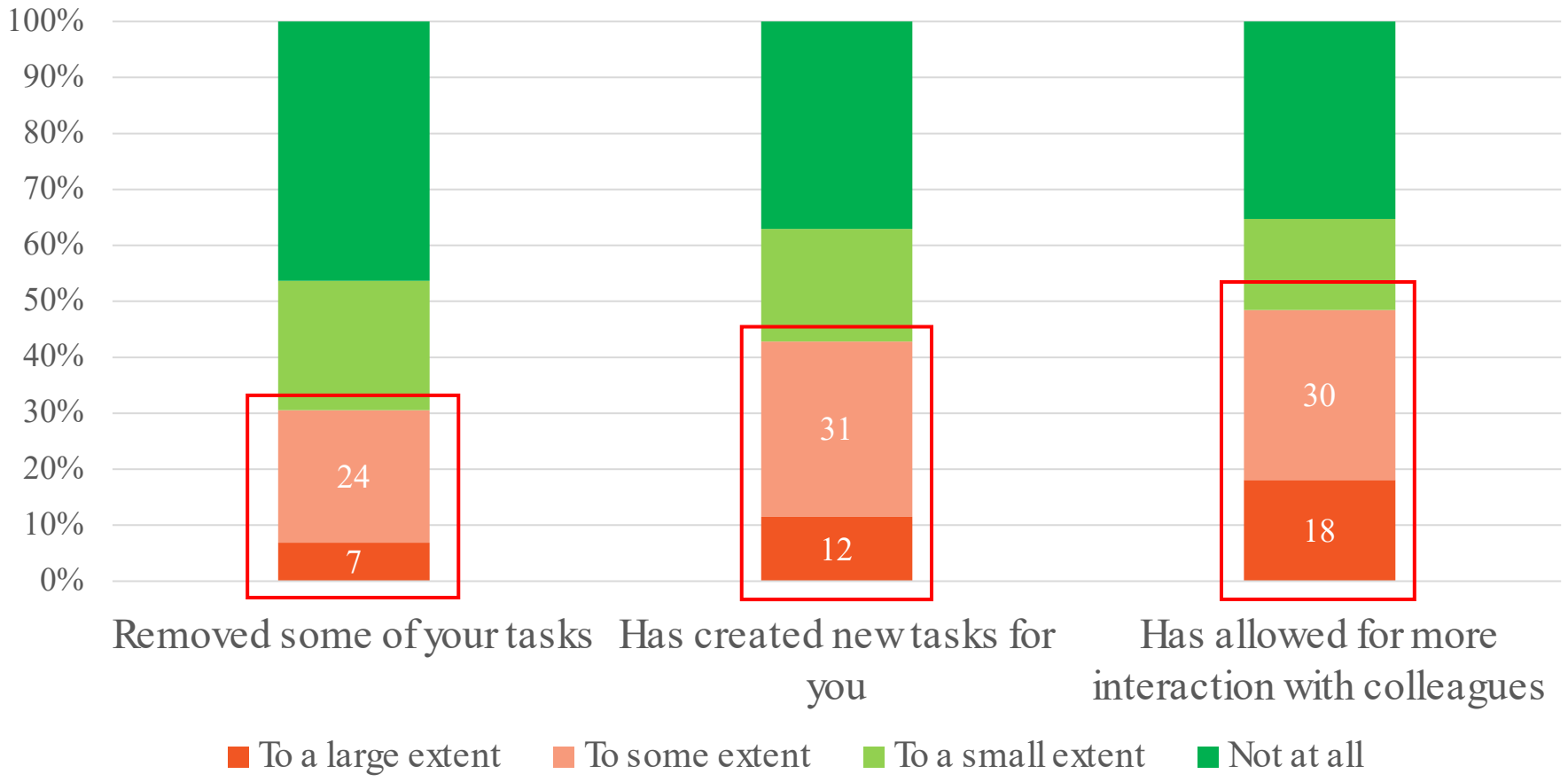
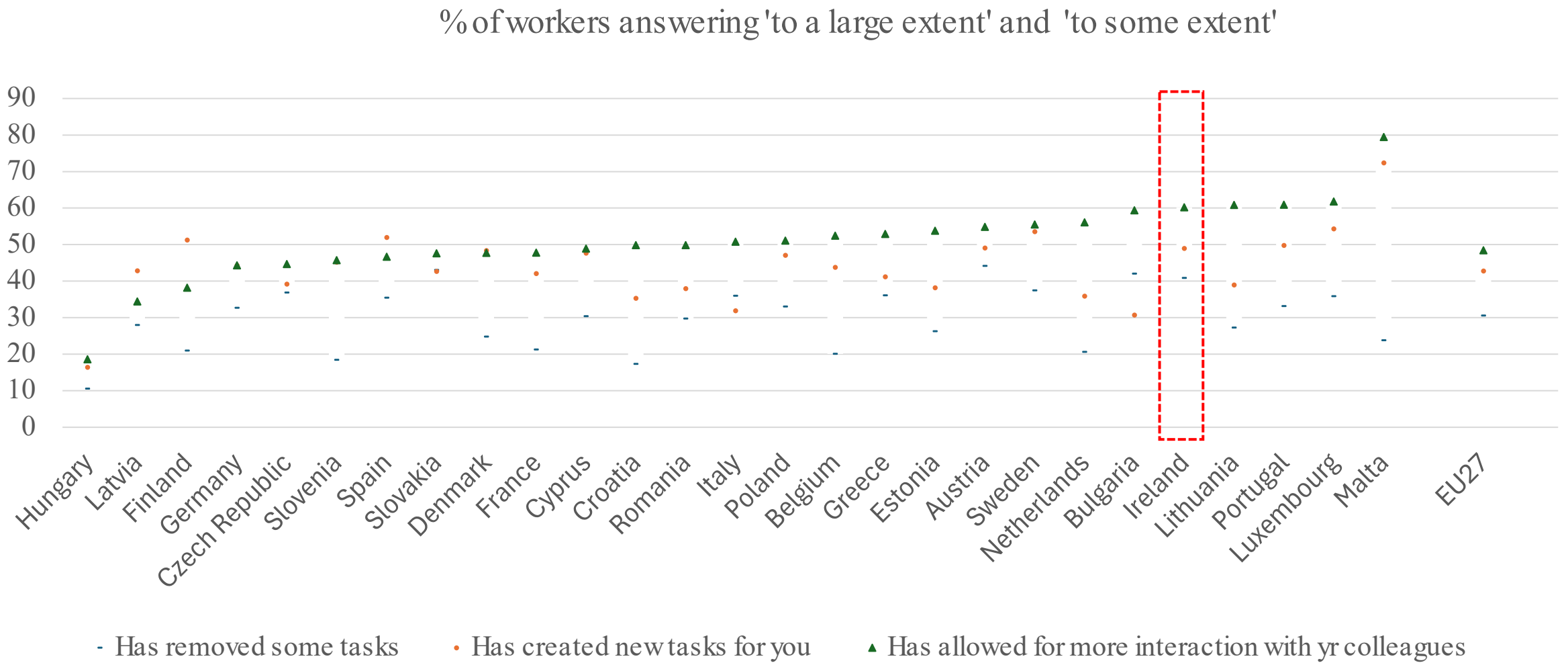
Technology creates more tasks and interactions with colleagues than removing tasks



Source: EWCS 2024

Impact of technology in the workplace in previous three years



Source: EWCS 2024

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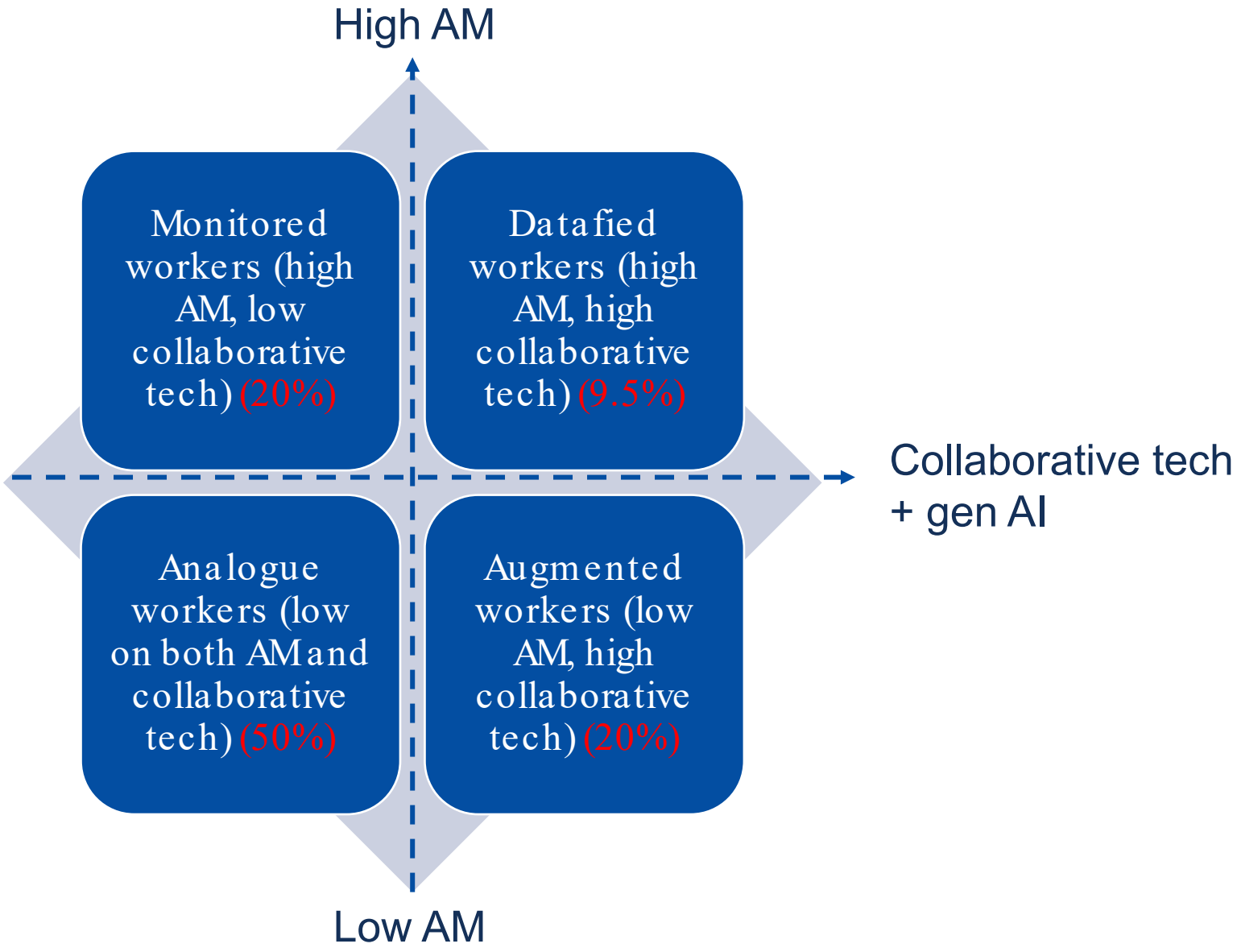
Key issues and concerns

- **Higher GenAI adoption** → Are employers providing training & frameworks for responsible use? Risk of digital divides between AI-skilled vs non-skilled workers.

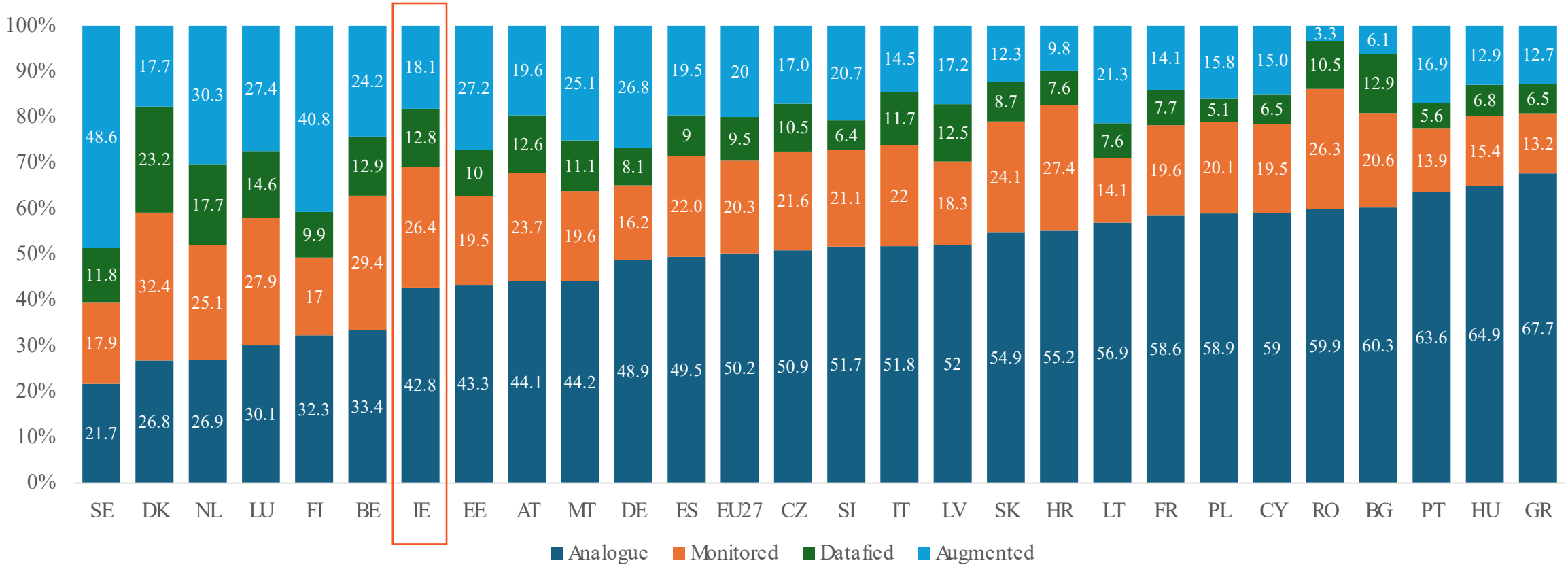
- **Job restructuring evidence** → New tasks created, others removed, more interactions. Greater impact in Ireland than EU average → Need to think about job redesign & rethink training?

- **Algorithmic management (above EU average)** → More monitoring & task allocation tools. Concerns remain about intrusiveness, privacy loss & constant surveillance.

Factor analysis – four worker profiles by use of AM and collaborative tech



A third of the Irish workforce falls into the Datafied/Augumented categories



Source: EWCS 2024

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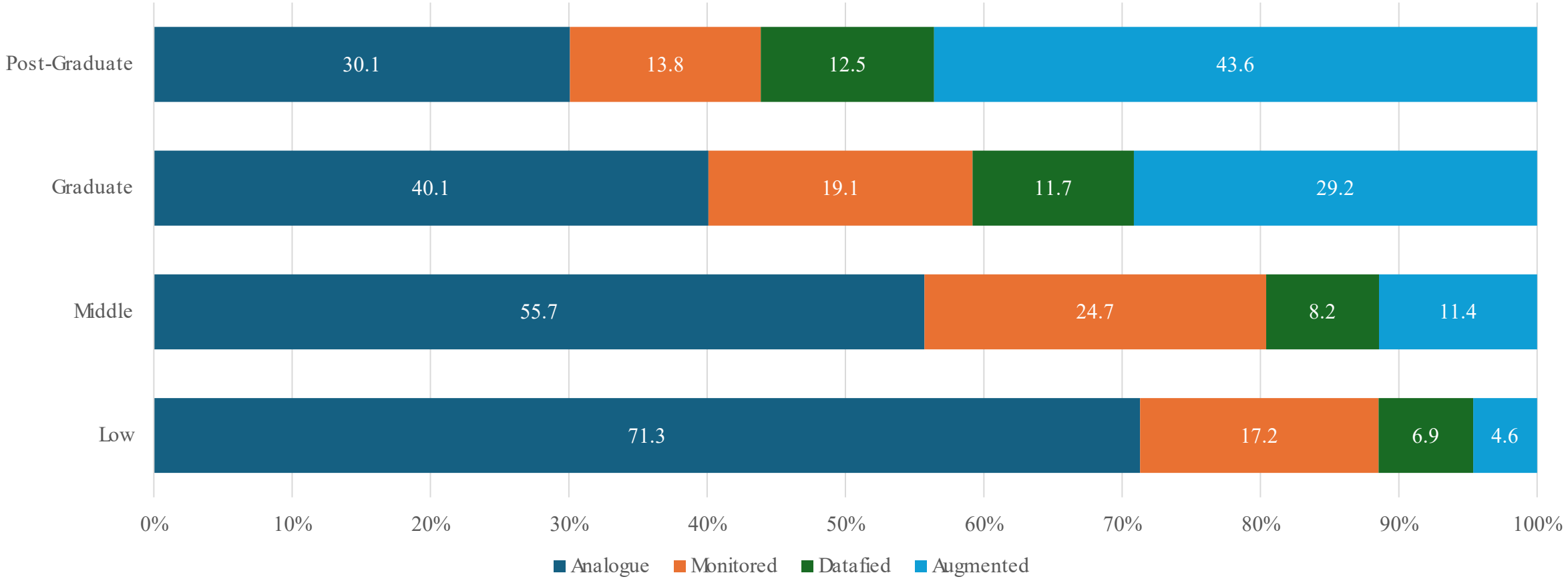
There is a strong educational gradient across profiles



Source: EWCS 2024

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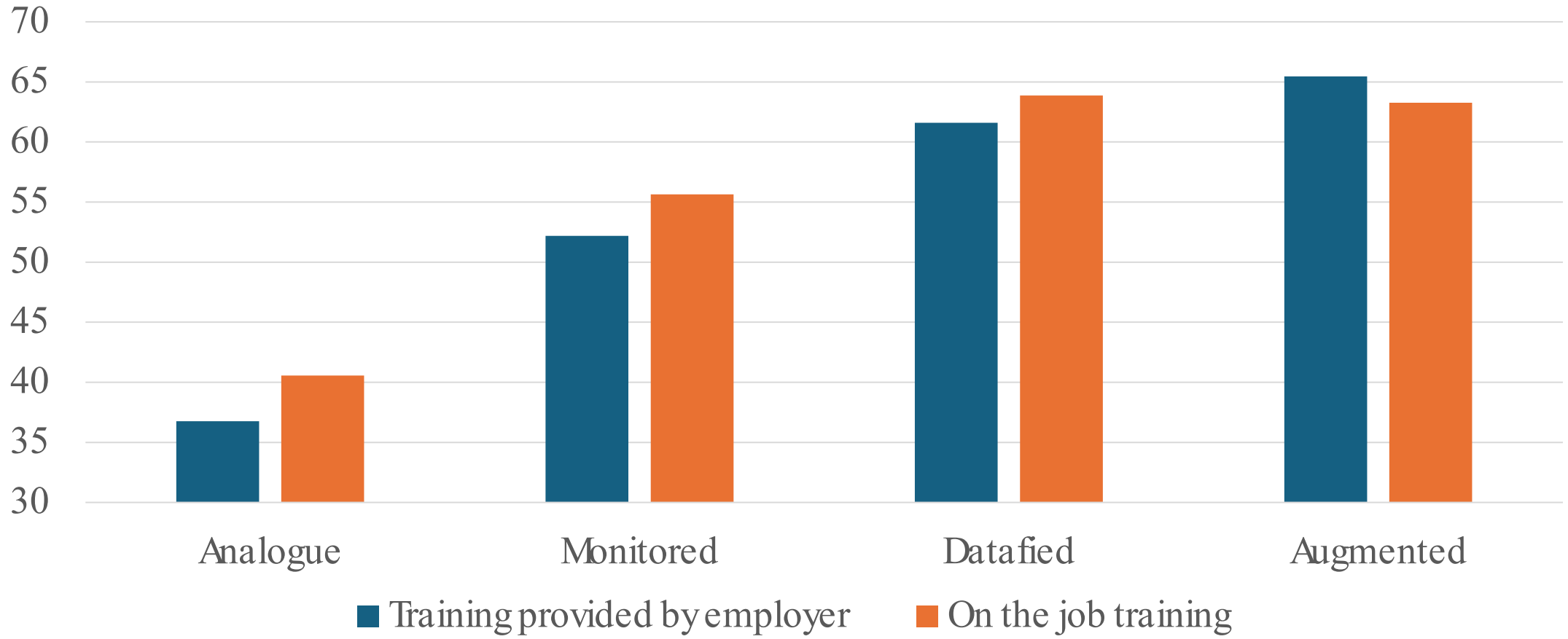
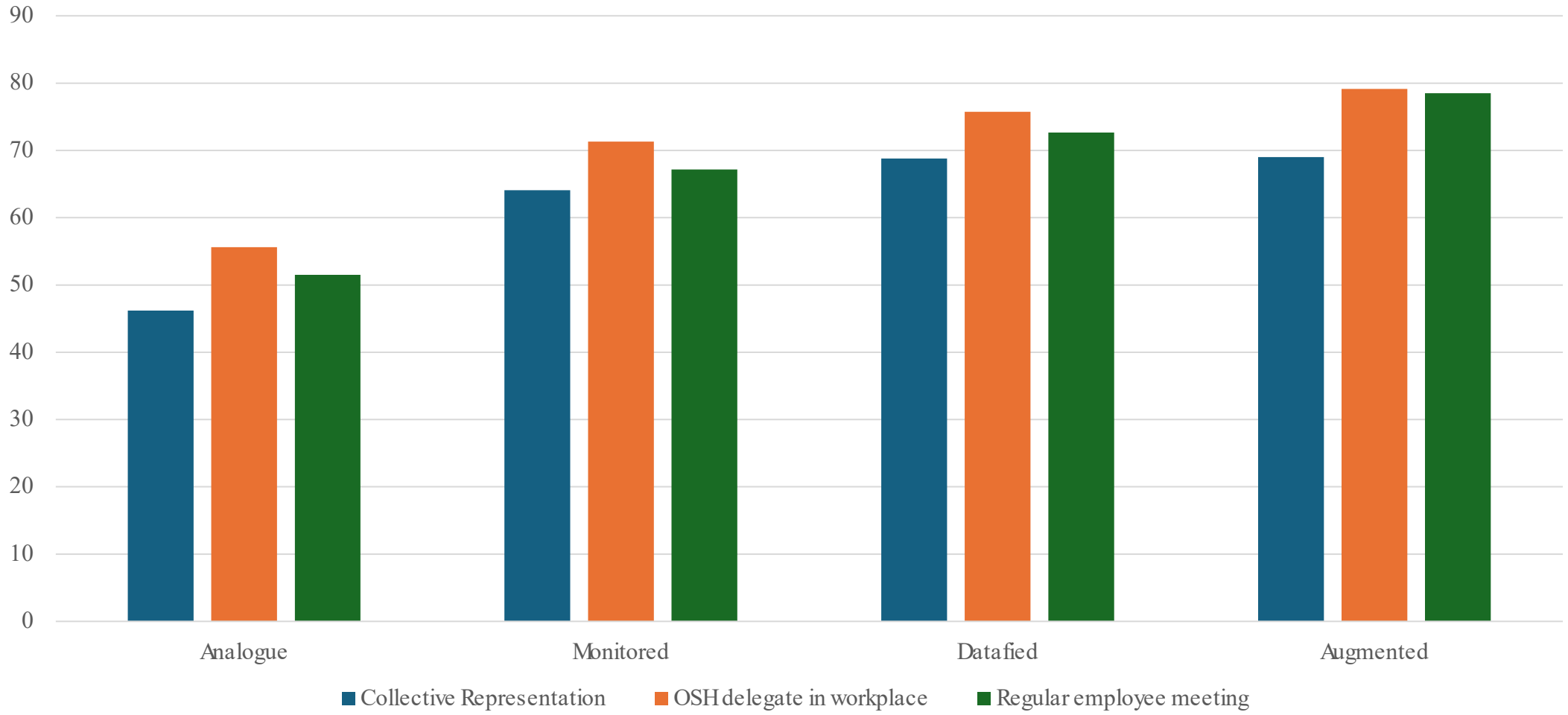
Training provision by worker profile



Source: EWCS 2024

Collective representation across worker profiles



Source: EWCS 2024

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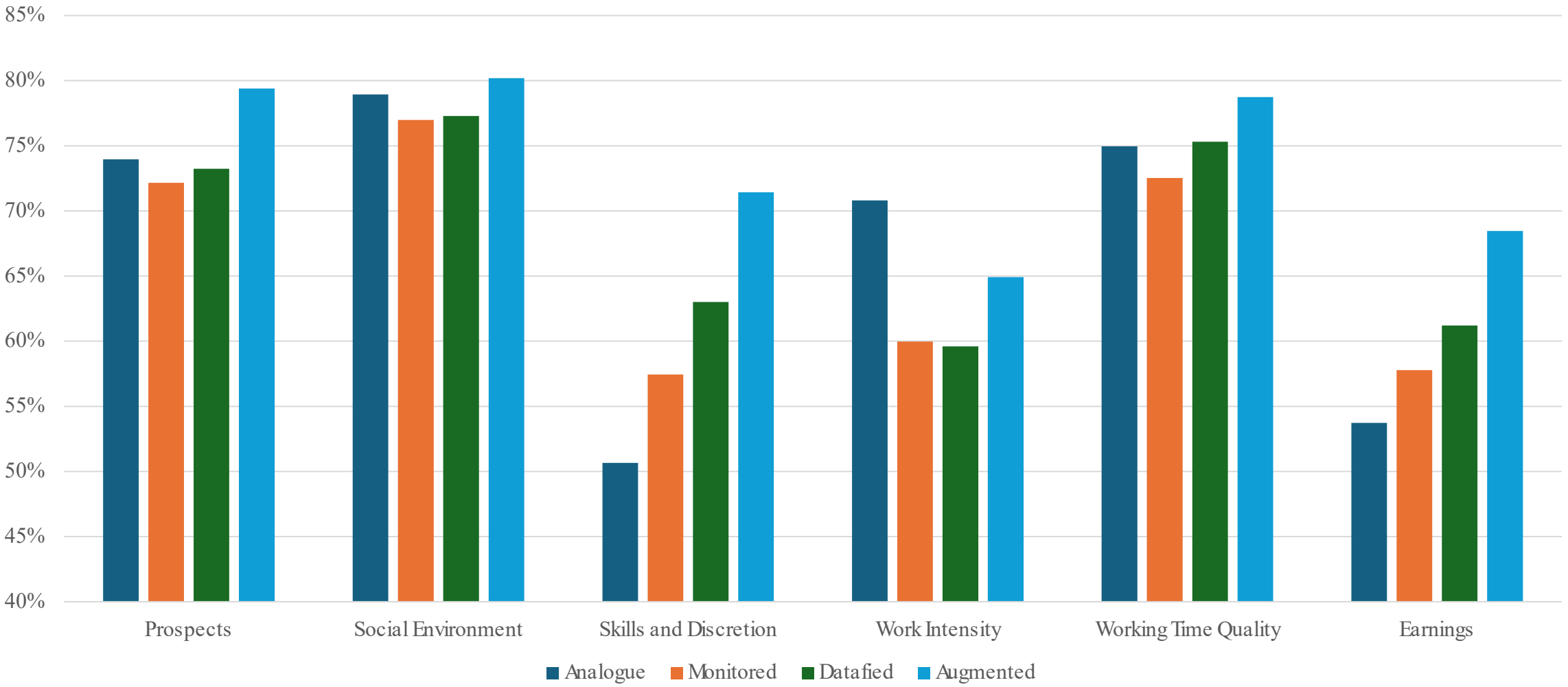
The ‘Algorithmic Penalty’ versus the ‘Augmentation Premium’



Source: EWCS 2024

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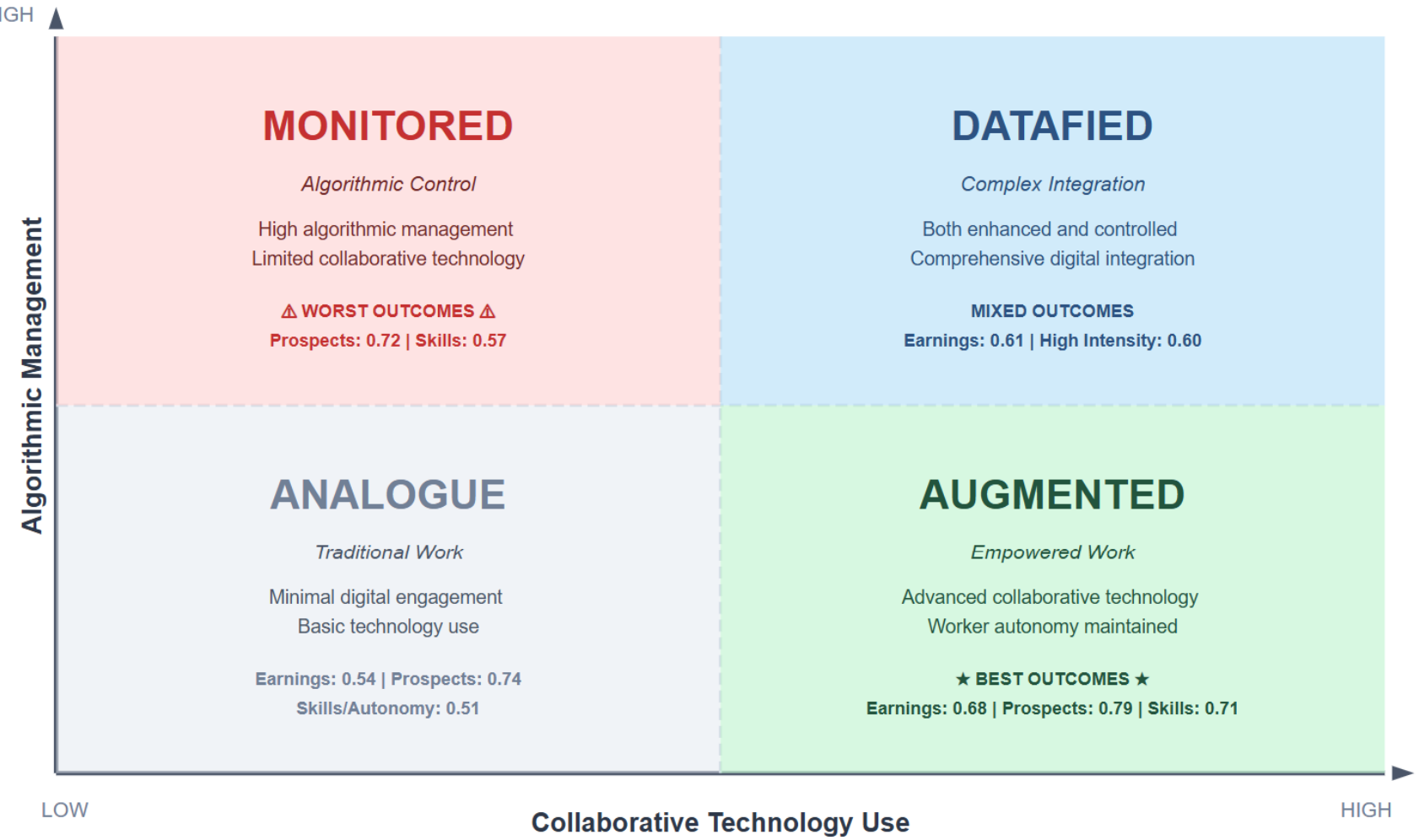
Overall findings



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Key issues and concerns

- Can training contribute to **transitions** between worker profiles or do structural barriers (education requirements, occupational segregation) limit mobility regardless of training provision?

- **Digital stratification** (cumulative advantages/disadvantages) remains a key concern as half of the EU and 40% of Irish workers fall into the ‘Analogue’ category

- **Algorithmic management** imposes significant costs on worker wellbeing and job quality. The way technology is implemented - to empower versus control - matters more than whether technology is present.

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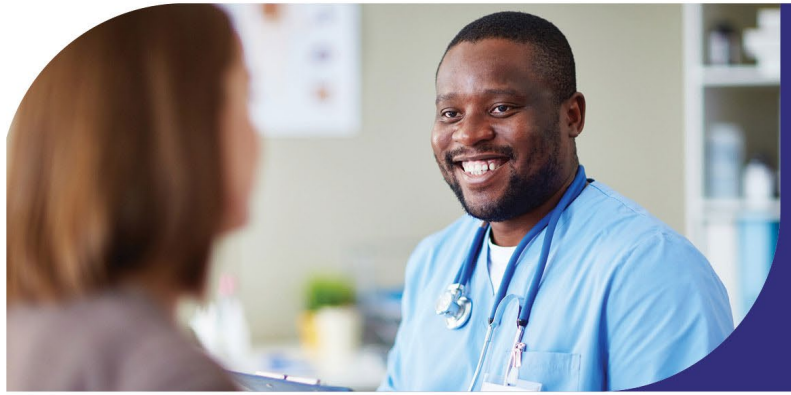
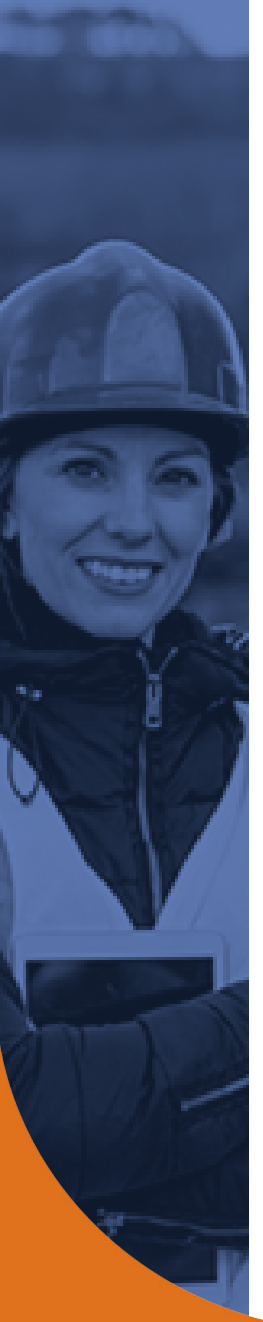
Managing Ergonomic Risk in the Digital workplace



Frank Power, Senior Ergonomist (Inspector),
Health and Safety Authority.

October 20, 2025. Dublin.



Managing Ergonomic Risk in the Digital workplace

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- Ergonomic defined and focus
- Digital workers and their work activity
- Potential Ergonomic Risk exposures for digital workers
- The legal context
- Managing ergonomic risk exposures

Ergonomics?

“Fitting the task to the human”(Grandjean)

- Studying the way work activity is carried out and the impacts on the individual
- Managing the risks so that the workers can work within their capabilities and protect their musculoskeletal health.
- Quantifying the physical risks such as excessive force, awkward posture, repetition.
- Developing better ways of carrying out a work activity

Ergonomic Management Interventions: Better ways of working

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Risk Exposure

Risk Management

Ergonomic Management Interventions: Better ways of working

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Risk Exposure

Risk Management

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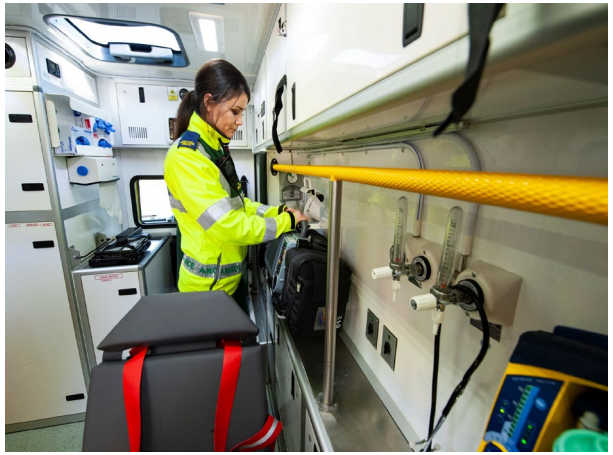
Risk Exposure

Risk Management



Digital workers and their work activity

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- *"Digitilisation is reshaping the world of work, introducing innovative work practices, fostering new industries and reshaping the physical and psychosocial work environment"*

  (International Labour Organisation, Global Report: "Revolutionizing Health and Safety: The Role of AI and digitalisation at work" 2025)

Digital workers and their work activity

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- Use of surgical robots in Health and Social Care
- Remote working
- Virtual Reality
- Automation and use of advance robots
- Wearable devices
- Algorithmic Management of work

Potential Ergonomic Risk exposures for digital workers

An tÚdarás Sláinte agus Sábháilteachta
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- Automation and advanced robotics

Poor posture during human-robot interaction (ILO 2019, Constantino et al 2021)

Collaboration with codots may lead to repetitive stress injury while making continuous small adjustments (Tegtmeier et al 2022)

Potential Ergonomic Risk exposures for digital workers

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- Algorithmic Management of work

Repetition: work is repetitive when it requires the same muscle groups to be used over and over again during the working day. Such repetition may not allow sufficient time for recovery and can cause muscle fatigue. May result in the onset of carpel tunnel syndrome, tendonitis, etc.

Non Neutral Awkward Work Posture: The incorrect positioning of a monitor or a seat at a computer workstation can result in the employee adopting an awkward posture (e.g. bending the neck, raised arms) which may contribute to the onset of an musculoskeletal disorder

Work Environment issues: examples would be poor lighting, no space to set up computer workstation, uncomfortable/non-adjustable seating

Static sitting posture over long duration

Potential Ergonomic Risk exposures for digital workers

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- Remote working and online work

Lack of proper workstation set ups (Fadel et al , 2023).

In India and Mexico only 27% and 16% of homeworkers respectively have a dedicated workspace (ILO, 2021)

Prolonged sitting, Repetition, Non Neutral Awkward Work Posture

Lack of 1:1 risk assessment of workstation set up by competent assessor

The Legal Context

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Health and Safety Authority

- Safety, Health and Welfare at Work Act 2005 Section 8 and Section 19
- Display Screen Equipment Regulation: Regulation 72 (1) (b)

The Legal Context

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Health and Safety Authority

- Section 8 –(2) (a) of the Safety, Health and Welfare at work act

"(2) Without prejudice to the generality of *subsection (1)*, the employer's duty extends, in particular, to the following:

(a) managing and conducting work activities in such a way as to ensure, so far as is reasonably practicable, the safety, health and welfare at work of his or her employees;"

The Legal Context

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Health and Safety Authority

- Section 19 –(1) of the Safety, Health and Welfare at work act

*"**19.**—(1) Every employer shall identify the hazards in the place of work under his or her control, assess the risks presented by those hazards and be in possession of a written assessment (to be known and referred to in this Act as a "risk assessment") of the risks to the safety, health and welfare at work of his or her employees, including the safety, health and welfare of any single employee or group or groups of employees who may be exposed to any unusual or other risks under the relevant statutory provisions."*

The Legal Context

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Regulation 72 (1) (b) of the Safety, Health and Welfare at Work (General application Regulations) 2007: (Display Screen Equipment Regulations)

Employer duties

- *perform an analysis of the workstation in order to evaluate the safety and health conditions to which it gives rise for the employees,*
- *take appropriate measures to remedy any risks found, taking account of the minimum requirements specified in Schedule 4*

The Legal Context: The Safety, Health and Welfare at Work (General application Regulations) 2007: (Display Screen Equipment Regulations)

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Schedule 4 (Minimum Requirements)

Display Screen

Keyboard

Work desk or Work Surface

Work Chair

Environment (Space, Lighting, Reflections and glare, etc.)

Key Points regarding Regulation 72 (1) (b)

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Health and Safety Authority

- The principal responsibility to provide analysis of employee workstations and the assessment of risk lies with the employer.
- Employees are obliged to co-operate with this process.
- Providing employees with a questionnaire alone to do their own risk assessment (e.g. self-assessment) is a delegation of responsibility and does not constitute risk assessment in line with regulatory requirements
- An assessor, independent of the employee, needs to conduct a risk assessment of an employees workstation.

Managing ergonomic risk exposures for digital workers: Remote working

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- Brief overview of the tasks completed at the workstation
- Evidence that all aspects detailed in Schedule 4 to the Regulations were taken into account as part of the analysis
- Details of issues that need to be followed up
- Details of an action plan to address outstanding issues, which stipulates who is responsible, what actions will be taken and when they will be completed.

Examples of issues to consider as part of the Ergonomic risk assessment

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- Lack of appropriate adjustable office chair
- Lack of knowledge of the adjustable features in office chairs
- Lack of appropriate office desk/work surface
- Use of laptop without a monitor, laptop stand or docking station
- Lack of space in the home
- Sustained sitting posture with limited opportunity for regular change in posture or opportunity to vary work tasks

Managing ergonomic risk exposures for digital workers: Five-step risk assessment model

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Step 1: Task Description:

Spend time observing the work and consult

Take a video recording of the task and/or photographs of different stages of the task

Step 2: Collect technical information:

Data on posture (hand, arm, neck), number of arm movements, neck movements, etc, work pace, work breaks)

Step 3: Identify the risk factors using evidence based risk assessment tool and fill in the relevant score sheet information

Reference: HSE UK (Art Tool)

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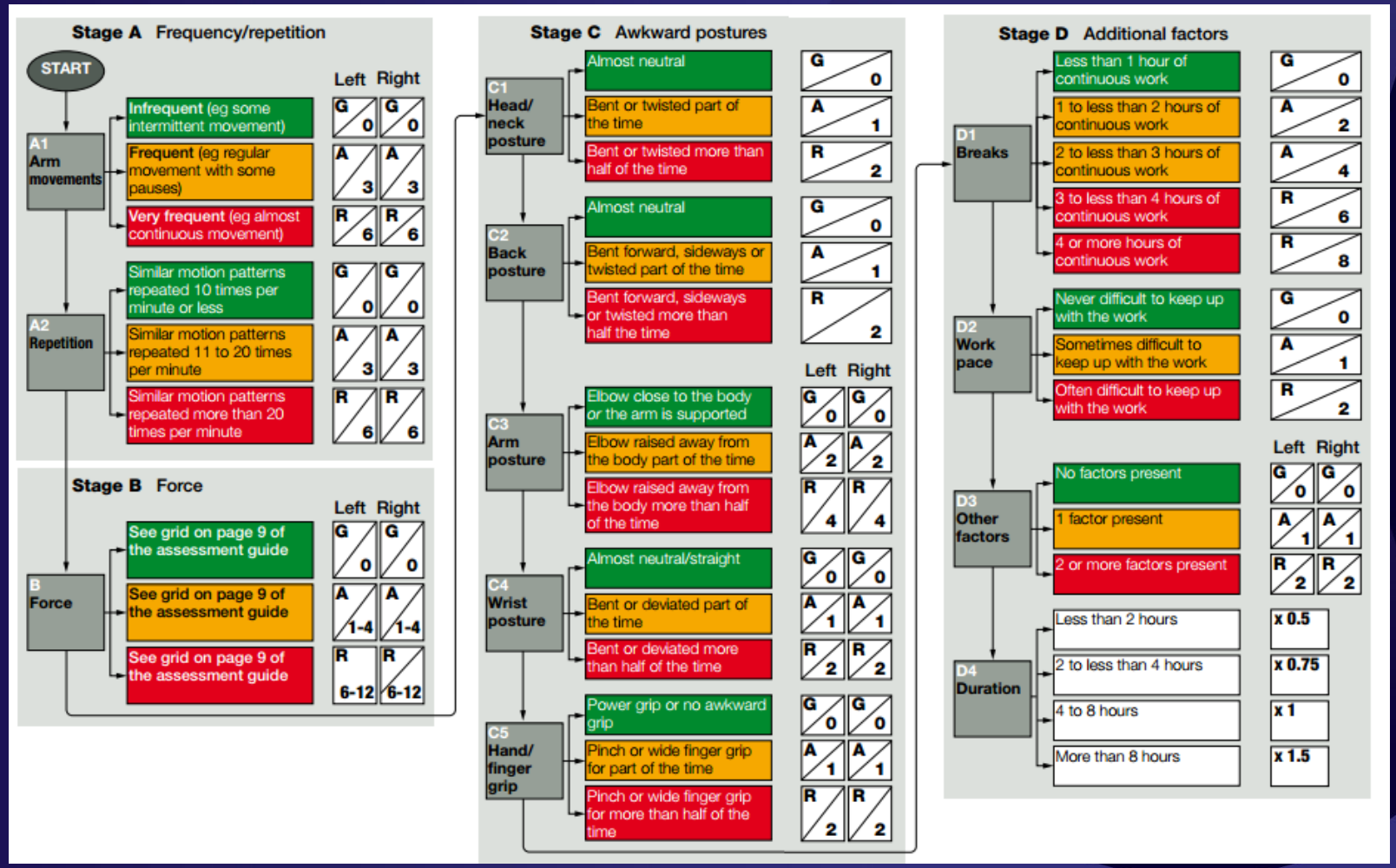

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Step 4: Identify the improvements to be put in place

Optimise the interaction between humans and digital tools. Better design of website layout, well structured software application, ease of navigation, clear visual cues on screen, etc

Step 5: Review the effectiveness of the improvements made

Carry out a review to ensure that the recommended improvements have been implemented and that they have addressed the identified risk factors. The assessor may decide to use the relevant risk assessment tool again to score the task and to determine if the scores for the different criteria have resulted in a sufficiently low level of risk.

Managing ergonomic risk exposures for digital workers: Closing Points

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- Risk assessment should be conducted regularly
- Refer to hierarchy of control/Principles of Prevention to guide preventive measures
- Involve workers in all stages of digital technology implementation particularly at the design stage
- Training should equip workers with the necessary skills to use new technologies safely
- There is a need for further research to understand the risk exposures of new digital technologies

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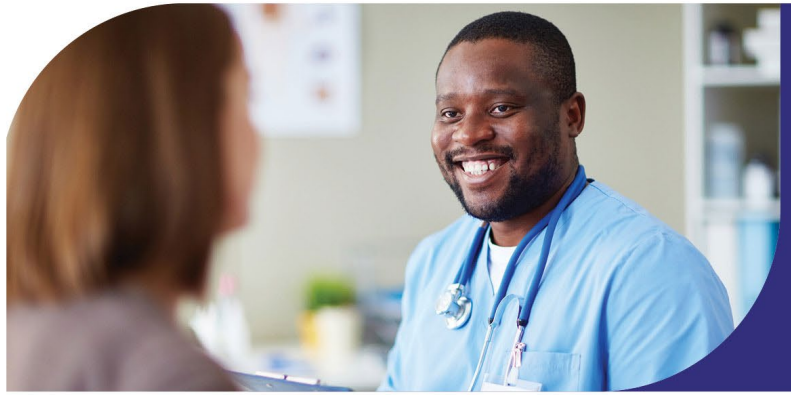
Go raibh maith agaibh

Thank you



E: francis_power@hsa.ie

W: www.hsa.ie

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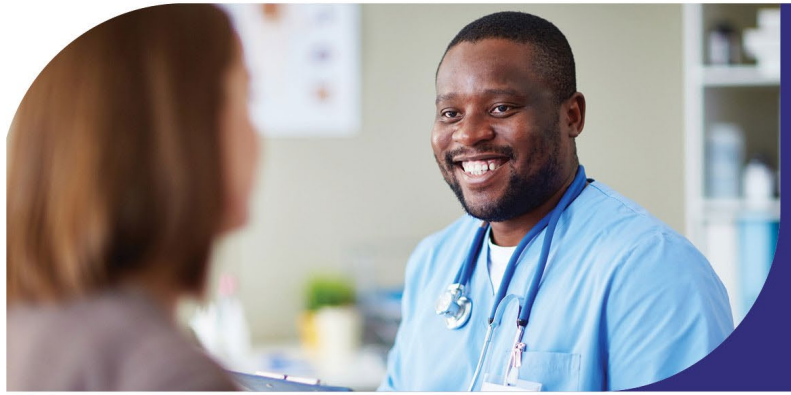
Human Factors for Smarter Digital Systems



Colleen Butler, PhD., C.ErgHF MCIEHF

20 October 2025

Introduction

An tÚdarás Sláinte agus Sábháilteachta
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*"If designed, implemented, managed and used in line with a **human-centred approach**, digital technologies can be safe and productive."*

(EU OSHA, 2025)

Aim

Raise awareness of Human Factors – questions, techniques and concepts that enable human-centred design.

Outline

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- What is Human Factors?
- Human Factors integration
- Human Factors techniques to support system safety
- Risk assessment

Defining Human Factors

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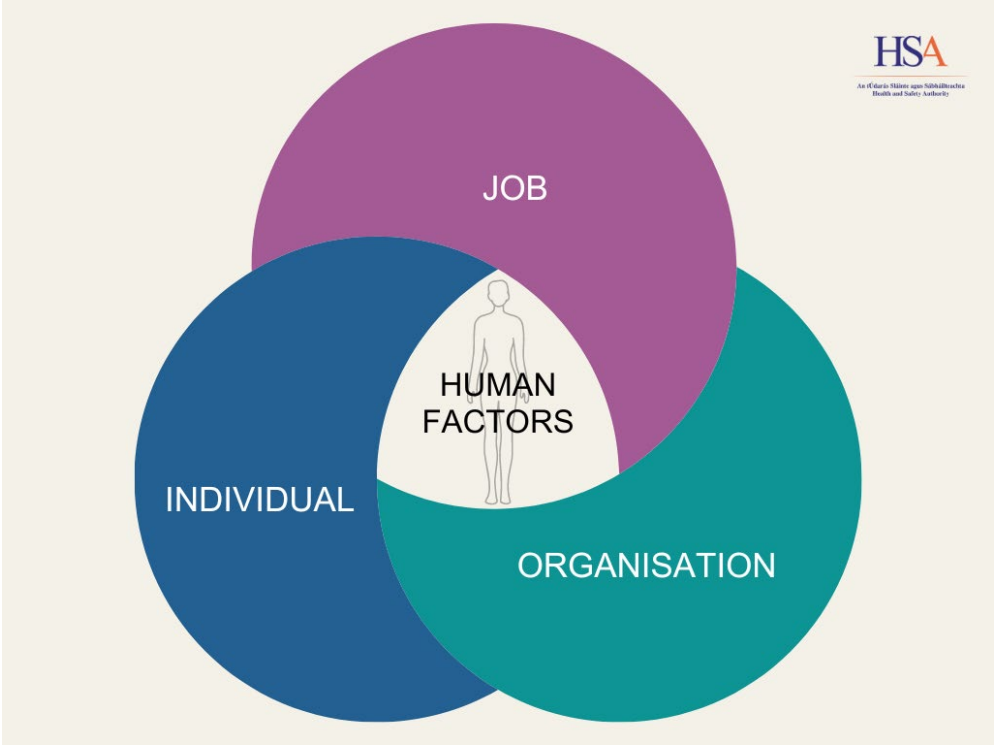
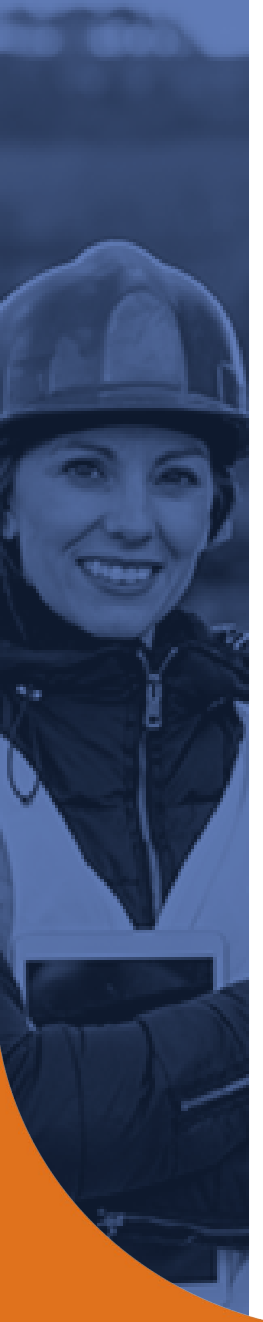
"Human Factors refer to environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety."



Adapted from Reducing Error and Influencing Behaviour, 1999 (HSE UK)



Design work for people being people

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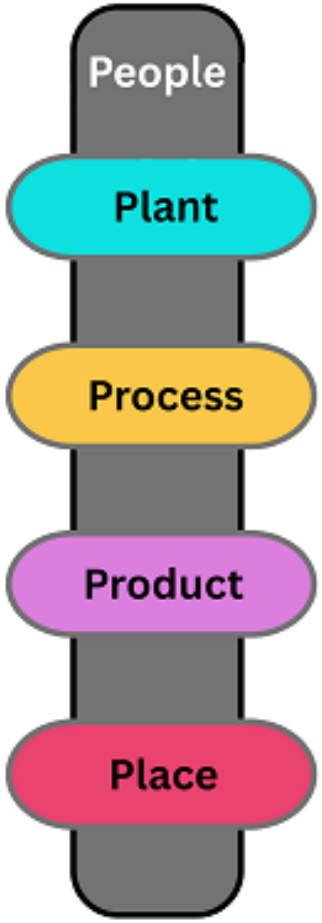
Abilities

Adapt to demands

Interpret procedures

Innovate

Detect and correct



Limitations

Memory

Attention

Decision making and biases

Performance Influencing Factors

Individual Factors

- Competence
- Illness/health
- Fatigue
- Physical strength
- Sensory capability

Job Factors

- Equipment Design
- Workload
- Procedures
- Shift Handover
- Computer Interface

Organisational Factors

- Health and Safety Culture
- Accident Investigation
- Communication
- Competence Management System

Hierarchy of Control

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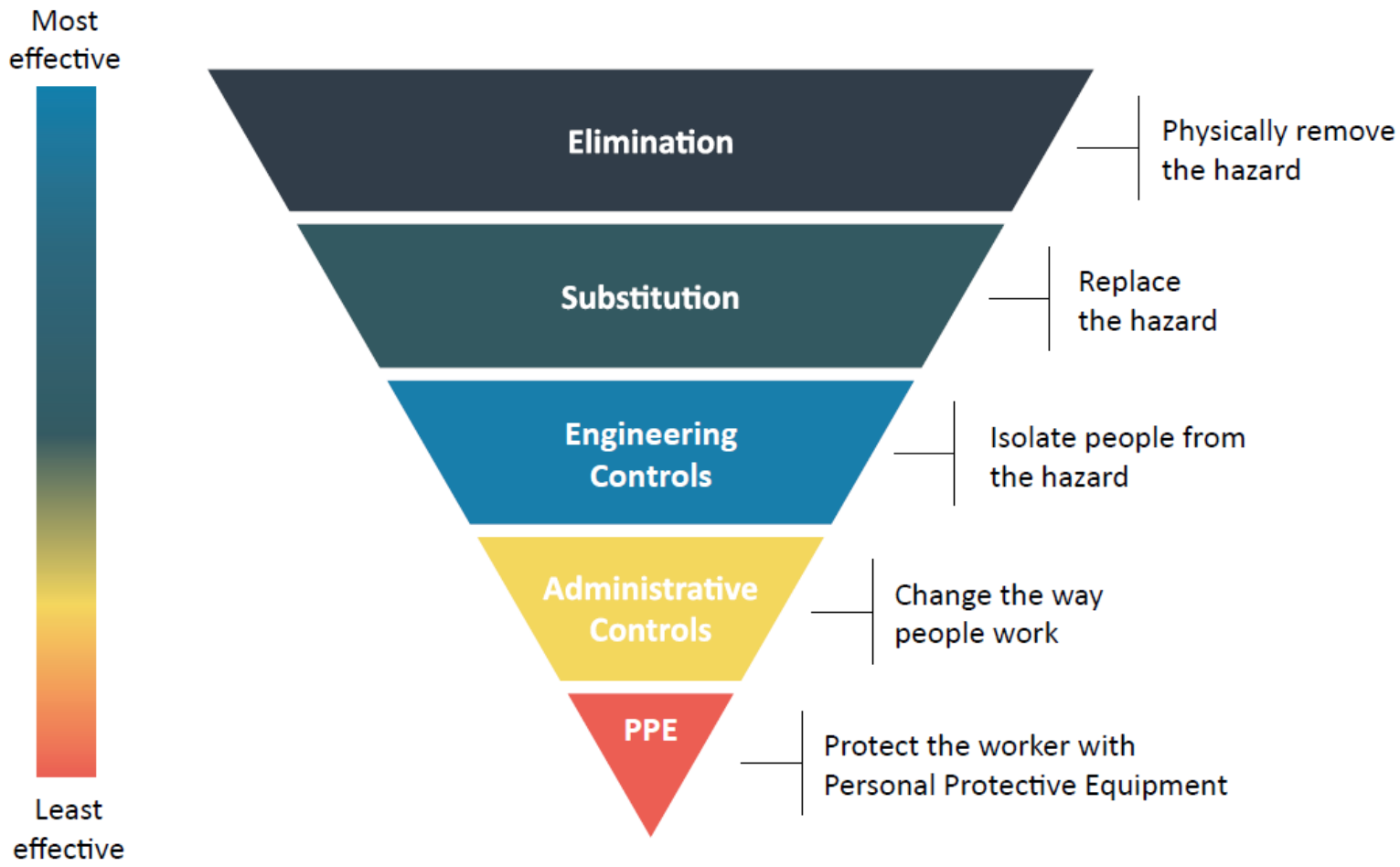

(How to carry out human factors assessments of critical tasks, Chartered Institute of Ergonomics and Human Factors, 2023)

Integrating Human Factors

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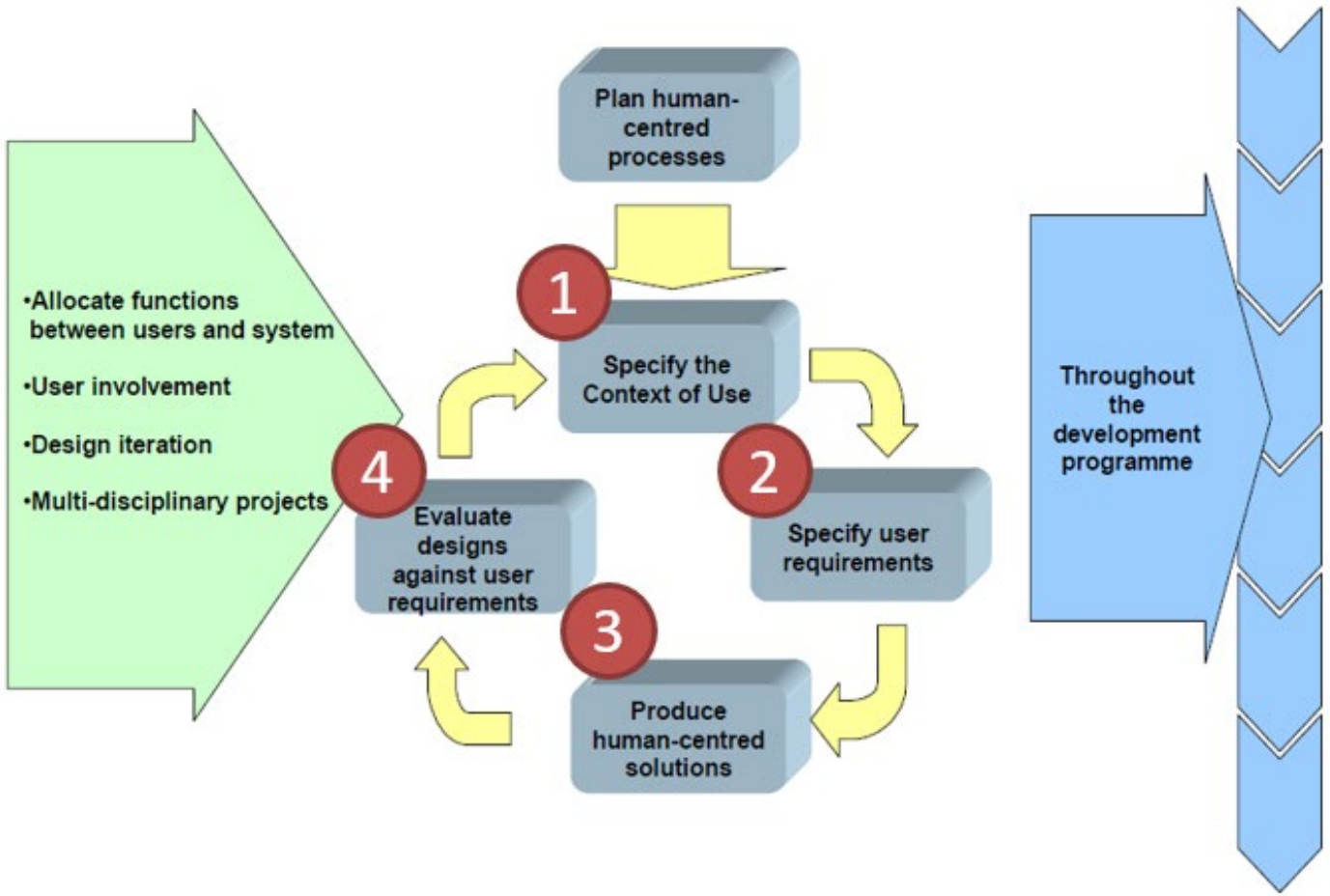

The principles of human-centred development and the activities that achieve them (HSE, 2002)

Integrating Human Factors

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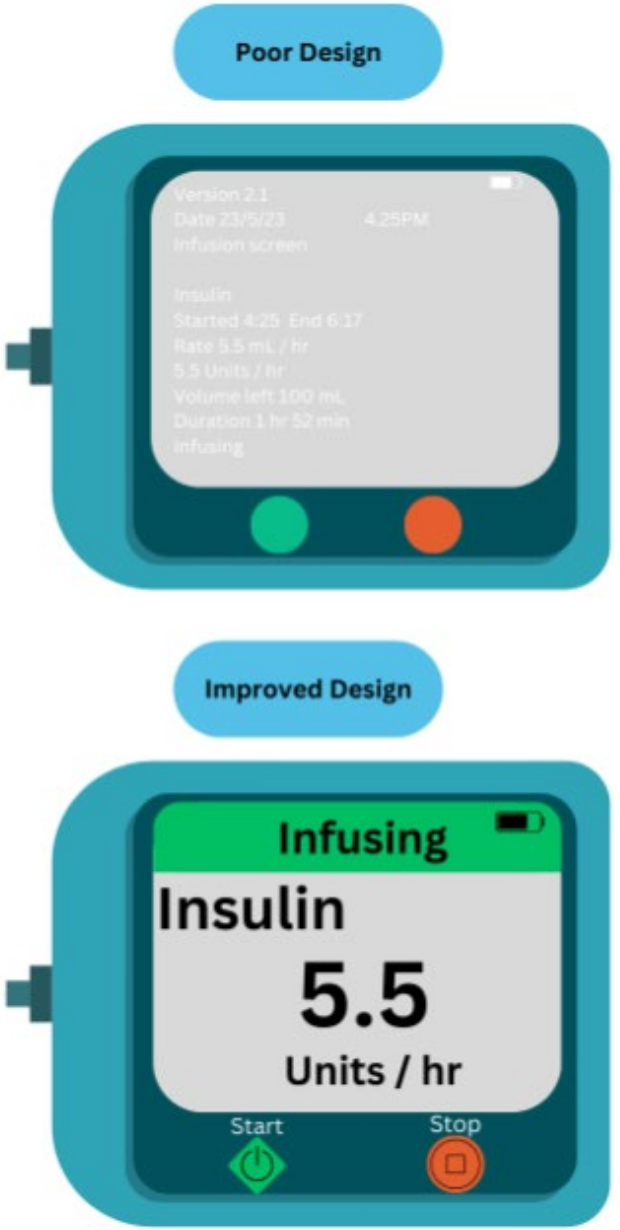
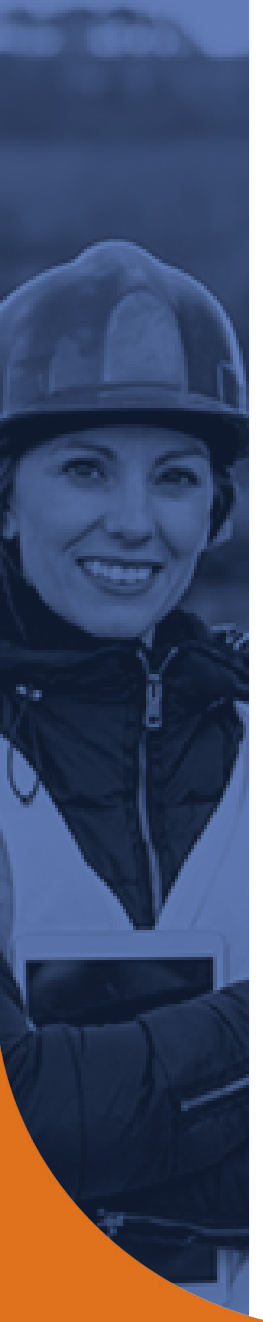
	HF Domains and Questions	HF Toolbox!
1. Specify the Context of Use	**Staffing? Who are the users? What tasks will they be doing?**	**Task identification**
2. Specify user requirements	**Training and Competence? Procedures? Does the system require new skills? Design and delivery of training? Are new procedures required? Job Aids?**	**Task Analysis**
3. Operative-centred Solutions	**Human Machine Interface? Are human characteristics accounted for in system design to optimise performance within the human/machine system?**	
4. User Evaluation	**System Safety? Sources of error? Recovery from error?**	**Human Reliability Assessment**

Human Machine Interface

Designing for trust and control

- Cognitive considerations - workload?
- Physical design considerations - accessibility, usability, standardisation of design?
- Psychological aspects – trust, stress, motivation – feedback and visibility?





System Safety > Focus on ‘work as done’

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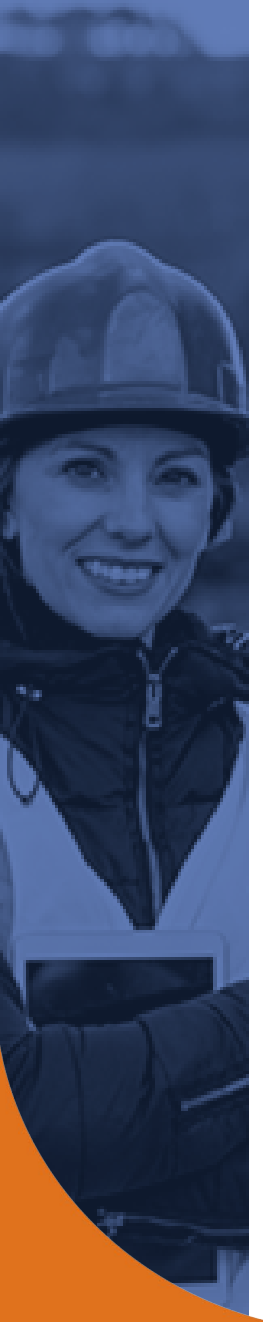
- ‘Work as imagined’ vs ‘work as done’
- Observe how a task is done in reality
- Understand where the task can go wrong
- Understand what increases or decreases things going wrong



Task Analysis

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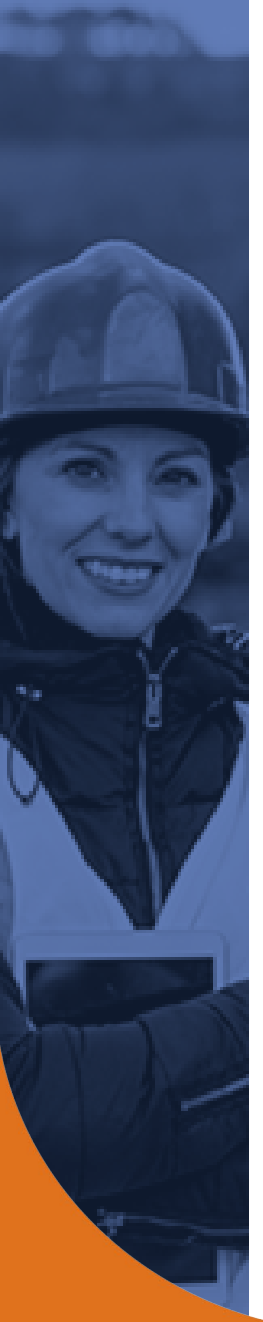
- Walk-through talk-through
- On location
- Experienced person demonstrating how the task is carried out
- Involve relevant personnel

TASK: Working on an electrical panel	
Steps	**Hazards**
1. Identify the panel	
2. Identify circuits to work on	
3. Measure voltage	
4. Etc.	

Energy Institute (2025) Guidance on human factors in task-based risk assessment



Human Reliability Analysis

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- Step by Step list of actions
- Possible errors
- Conditions that make error more likely
- Controls to address errors

TASK: Working on an electrical panel

Steps	Hazards	Error-producing conditions	Hazard controls	Error-producing conditions controls
1. Identify panel		**Possible error:** Opening incorrect panel **Error-producing conditions:** Clarity of signs, signals, instructions and other information: The panels all look the same, and there is no labelling on them The procedure does not specify the panel number, but it has to be identified from a complex technical drawing		**Engineering controls:** Add sensors so that the wrong panel cannot be opened Add numbers and labels on the panel doors at eye height **Administrative controls:** Add panel numbers to the procedure
2. Identify circuits to work on	Electricity from live equipment: shock, burns, arc flash	**Possible error:** Incorrect circuit identified **Error-producing condition:** Clarity of signs, signals, instructions	**Engineering controls:** Controlled Access (locked substations) **Administrative controls:** Staff Training and Competency, Electrical Authorisation	**Engineering controls:** Replace the label using material that doesn't wear off in these conditions

Energy Institute (2025) Guidance on human factors in task-based risk assessment

Benefits of Task Analysis

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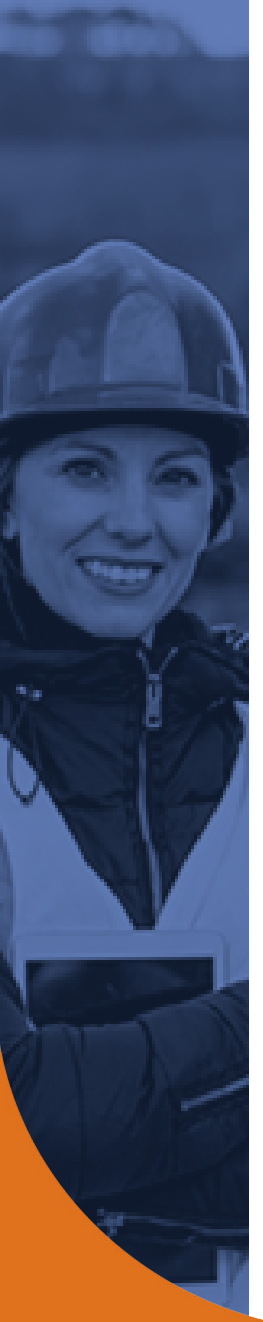
A thorough understanding of a task can contribute to:

- Accurate and workable procedures
- Assuring the competence of employees
- Understanding workload
- Design of workstations, plant and control systems
- Person specifications for recruitment
- Effective risk assessment

https://www.hse.gov.uk/humanfactors/assets/docs/understanding-the-task.pdf



Human Factors in Risk Assessment

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1. Identify hazards – What are the critical tasks where there is a reliance on people?
2. Evaluate risks – consider what can go wrong:

   What makes error more likely?

   What difficulties or mistakes have happened in the past?

   What makes this step difficult?

   What do you find frustrating about this step?

   If you had an apprentice doing this task, what would you tell them to watch out for?
3. Put control measures in place - What actions need to be taken to ensure control measures can be implemented?

Key Messages

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Human Factors = human-centred design of the system

- Involve workers early > system safety, managing expectations, seeing the benefits
- Test early, test often
- Value the process and the outcome
- Balance innovation with human capability and limitations

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hsalearning.ie
HSA Online Courses

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Introduction to Human Factors

Introduction to Human Factors

This short course **Introduction to Human Factors** promotes the importance of designing work for people, and how this enables them to work safely, healthily and effectively. The course is designed for health and safety managers, supervisors, safety officers, safety representatives and policy makers in all sectors of industry with a role in managing health and safety.

Course duration: 20 minutes

Learning outcomes:

At the end of this course you should be able to:

- define Human Factors and outline its benefits,
- outline the individual, job and organisational factors that influence performance,
- understand error and non-compliances and how to influence them,
- identify the legal duties of the employer relevant to Human Factors, and
- explain the relationship between Human Factors and health and safety in the workplace.

Enter course

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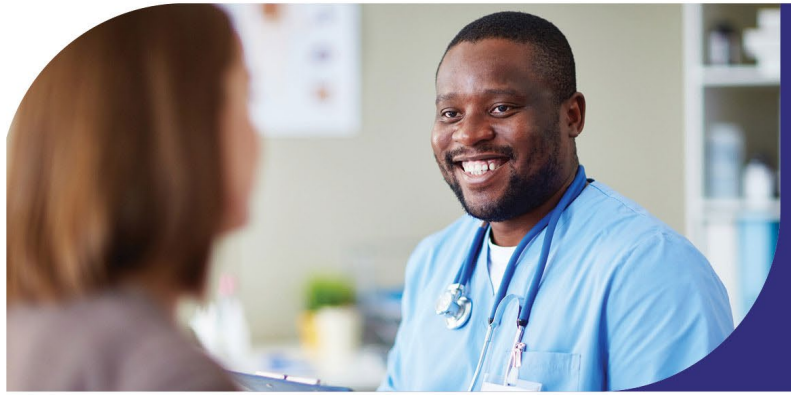


T: 0818 289 389

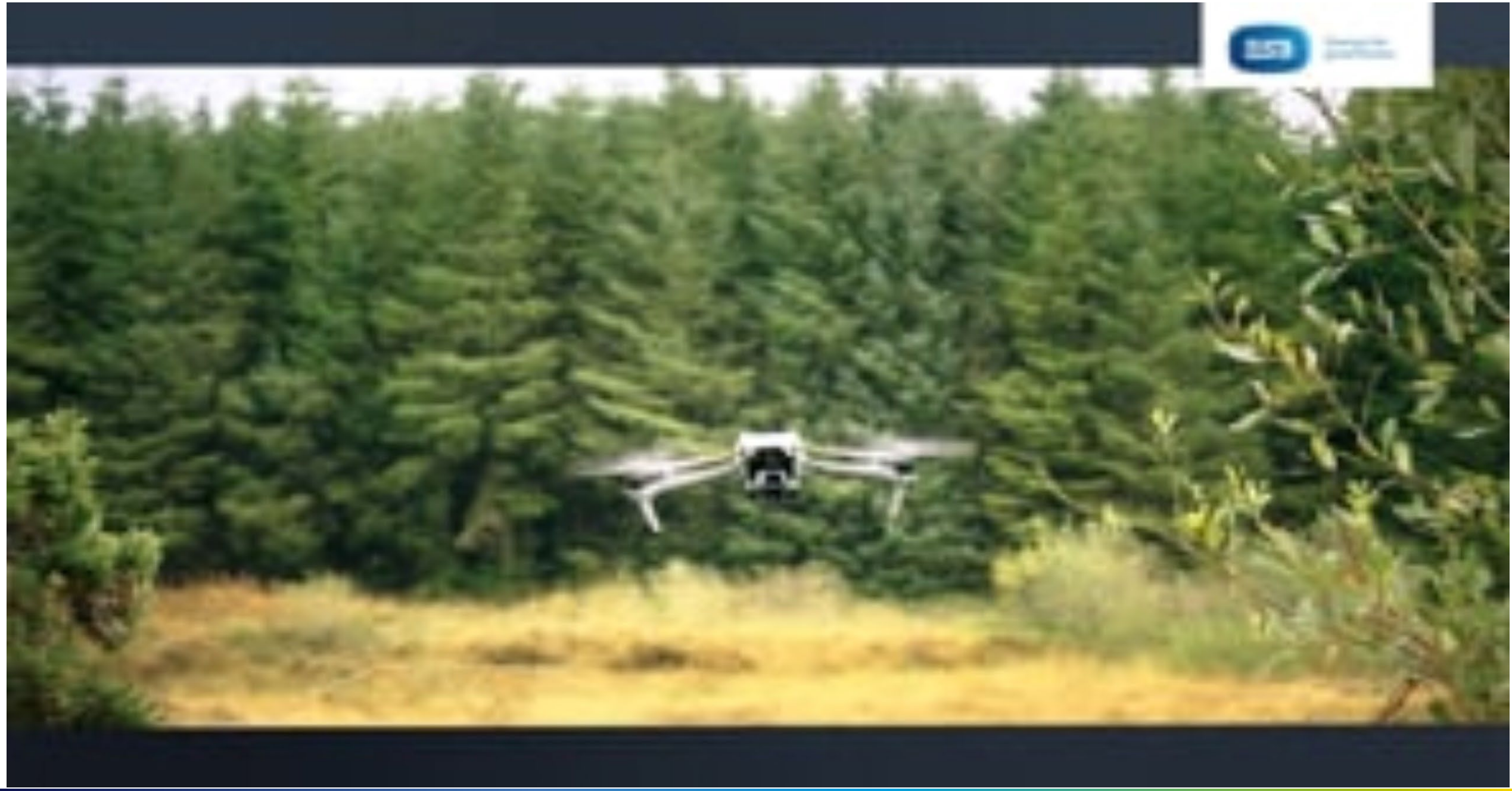
E: contactus@hsa.ie

W: www.hsa.ie

Energy for generations

Transforming Irelands' Electricity Network: Drone-Powered Safety Maintenance Patrolling, Fault Hunting

20th October 2025



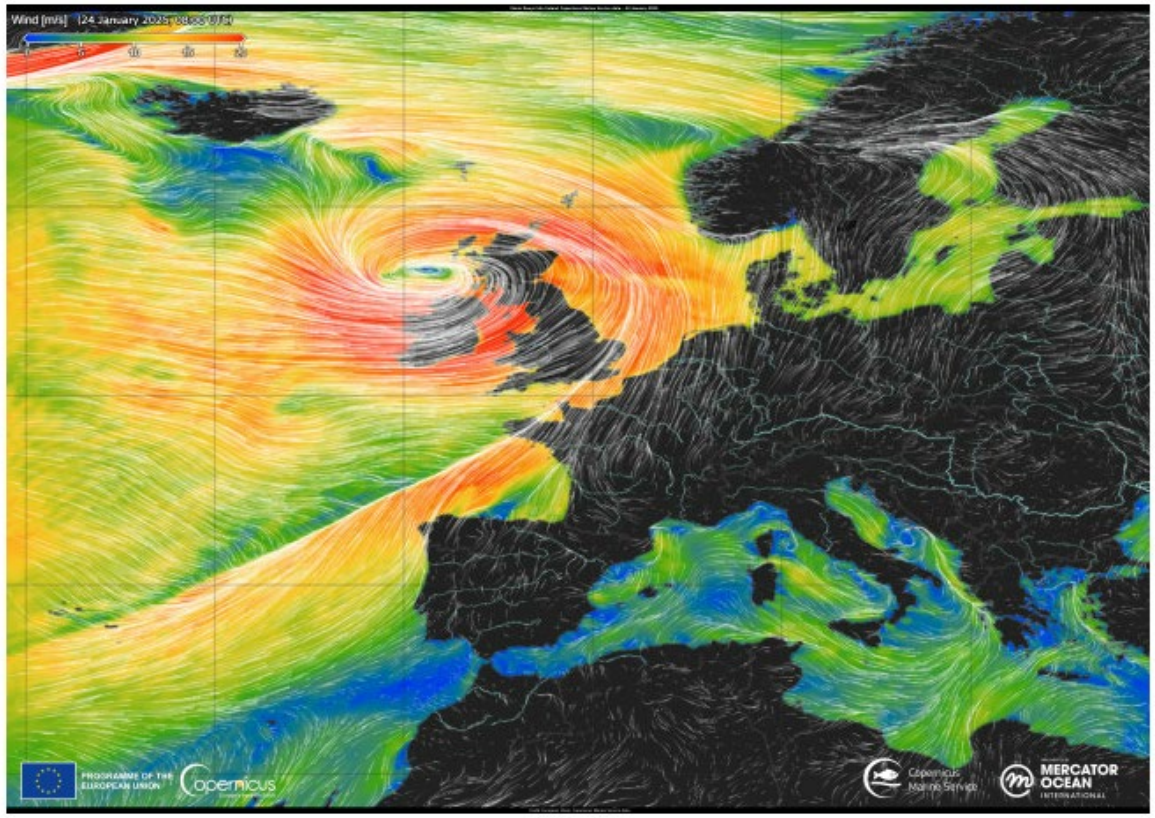
Ireland’s Network: Built to Endure, Challenged by Nature

A Network for all Seasons

- ✓ National electricity network serving everyone.
- ✓ c.157,000km Overhead Network on 2.3million poles.
- ✓ Exposure to Ireland’s unique weather conditions, coupled with climate change, drives stress and fatigue within conductors and overhead equipment.
- ✓ Continuous network scrutiny is vital.

Storm Impacts

Storm effects and impact



Wind pattern over the Atlantic at 09:00 IST on 24 January 2025, as Storm Éowyn swept across Ireland. (Image created by Copernicus Marine Service).

- ✓ Storm Éowyn brought record wind surges and rainfall.
- ✓ ClimaMeter Institute confirmed Storm Éowyn significantly strengthened by human driven climate change.
- ✓ Extreme weather events demand rapid deployment of technologies facilitating speedy response + services restoration.
- ✓ Response must be controlled, managed and with Safety to all paramount.

What can Drones Offer?

- ✓ Drones offer innovative ways to improve ESB worker safety.
- ✓ Public Safety always paramount particularly in wake of storm recovery.
- ✓ Safety of ESB personnel + Contracted Support Partners equally important.
- ✓ Electricity service restoration efforts enhanced via drone capability.
- ✓ ESB pilots with drone technology speedily detect and assess faults on the network.
- ✓ Drones now play significant Risk Mitigation role.

Empowering People through Technology

Enabling our Staff

- Introducing ESB ‘Network Continuity Team’.
- Network Resilience operational objective.
- Making the most of available Technologies – People Led!
- Introducing ‘Unmanned Aerial Systems/UAS’ (drones)

ESB Network Drone Operations 2025

- Chief Pilot – Jason Kelly
- UAS Safety Manager – Robert Grimes
- UAS Operations Manager – Ed McAteer

Working Smarter not Harder

Core function of ESB drones

Drones as an everyday tool

- Facilitate routine patrols + network ‘condition’ assessment.
- Tree growth + ‘vegetation management’.
- Overhead line thermal imaging and fault detection.
- ‘Storm Response’ network survey facilitating ground access and repair.
- Reducing requirement to work at height.
- Staff training enhancement (drone video content and training material).
- Drones offer Safer alternative to ‘traditional’ network inspection.

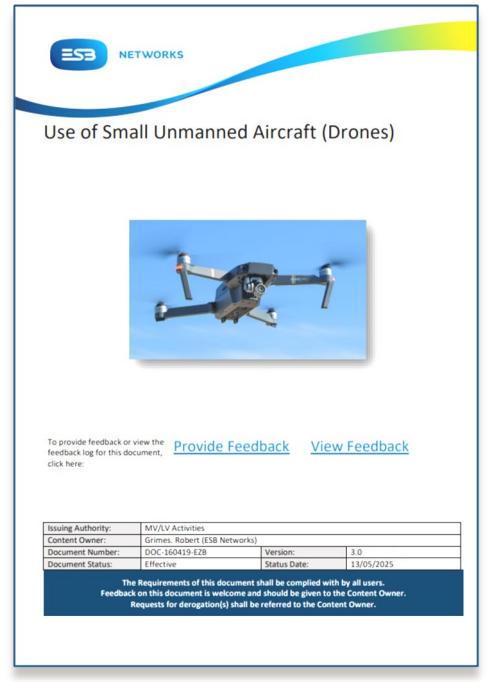
ESB Networks’ flights operated within GDPR compliance guidelines.

ESB Staff Training

ESB Pilot journey through competency

- IAA accreditation + certification, 5-year duration.
- ESB approvals + Practical Training, 3-year duration.
- ESB Company Standard governing UAS flight operations.
- Accessible digital technical library ‘OneSource’.
- ESB aircraft registered with IAA.
- Drone aircraft insured under ESB Group Insurance.

(ESB Pilot + IAA certification + ESB Approval) = Flying Competency



Voices from the Ground

Conor Walsh, ESB Patroller Limerick area, filmed the following to illustrate drone use benefit:

UAS Compliance

Guidelines which must be adhered to include:

- Safety, Health and Welfare at Work Act 2005.
- IAA drone (UAS) Operational Policy.
- ESB Company Standards:

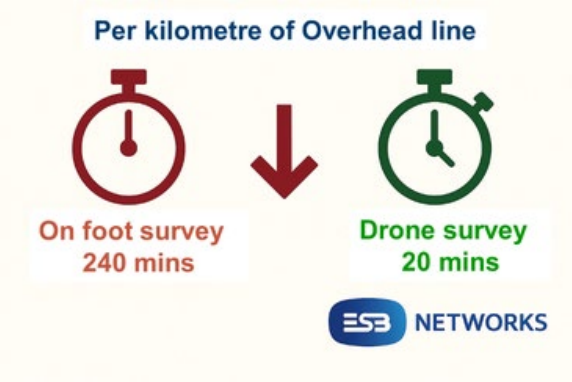
  UAS Operations Policy & Removal of Hazards.

- GDPR Compliance.
- CRU Regulatory Performance obligations.

Safety First: Real Results from Drone Use

Reduced Human Exposure:

- ✓ Fewer pole climbs and helicopter flights.
- ✓ Improved damage and fault assessment.
- ✓ Terrain + land access improvement.
- ✓ Faster fault detection (preventative maintenance).
- ✓ Numerous Operational + Financial Benefits



Reduced Human Exposure

A workday

An easier way

ESB Ambition

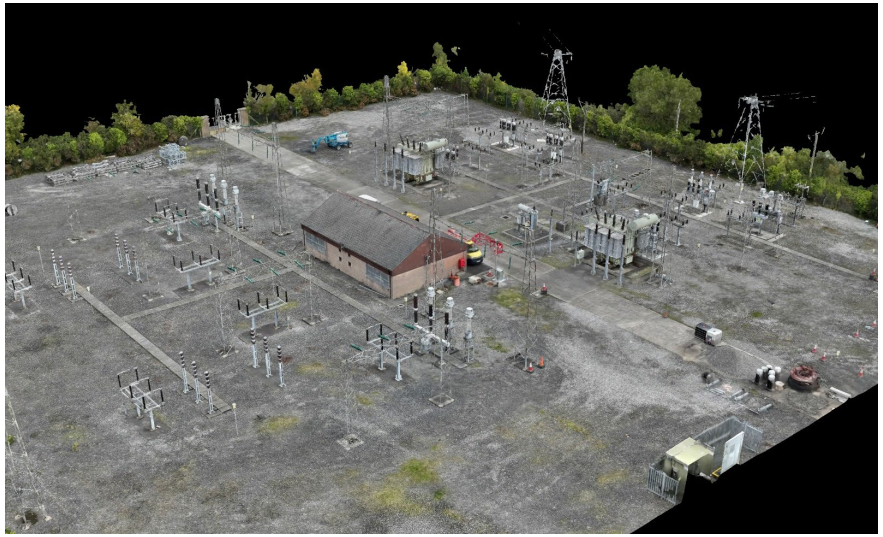
Drone use leadership improving safety + sustainability.

1. Protecting Lives – working at height reduction, improved terrain access .

2. Emergency Response – improved storm recovery + fault insights.

3. Precision & Prevention – drone imagery aiding early fault detection (infra-red, thermal imaging), pre-works safety assessment on HV Stations.

4. Sustainable Operations – carbon reduction, less road trips + less helicopter use.



Safer, Smarter, Together

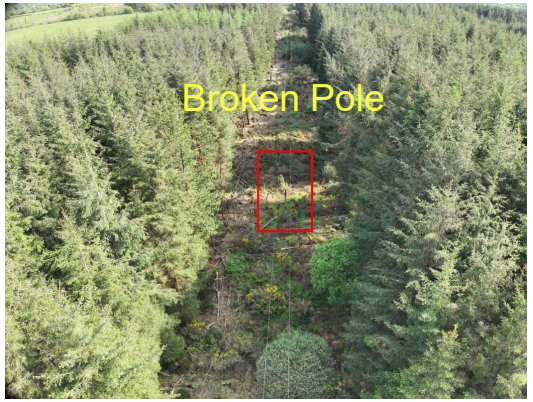
- ✓ Autonomous Line Inspections – our roadmap.
  - Drones autonomously navigating overhead lines and feeding back inspection data.

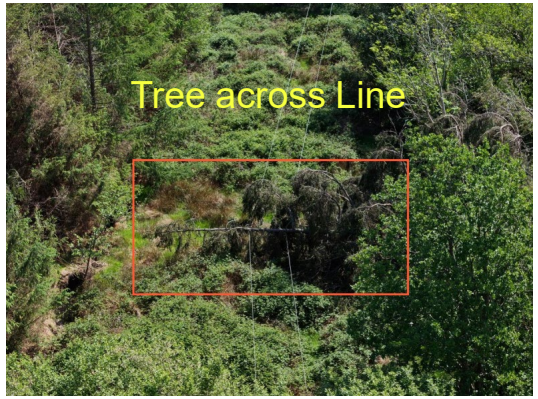
- ✓ Predictive Maintenance – AI analytics use.
  - Integration of AI enabling predicative maintenance + enhanced decision making.

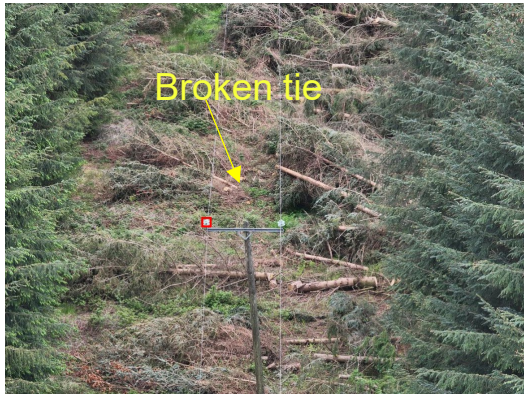
- ✓ Collaborative Innovation between EU Partners + Global Utilities.
  - Partnership with other Utility Operators promoting EU-wide safety innovation cooperation.

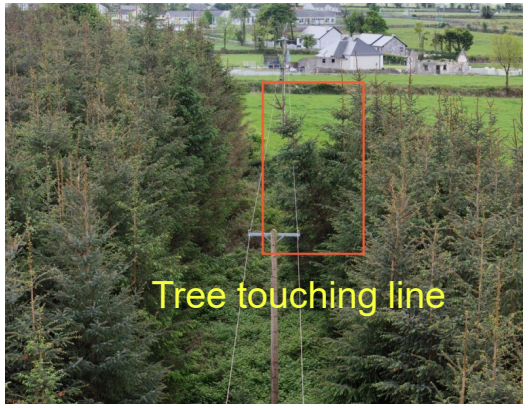
Winter Resilience: Real-World Impact

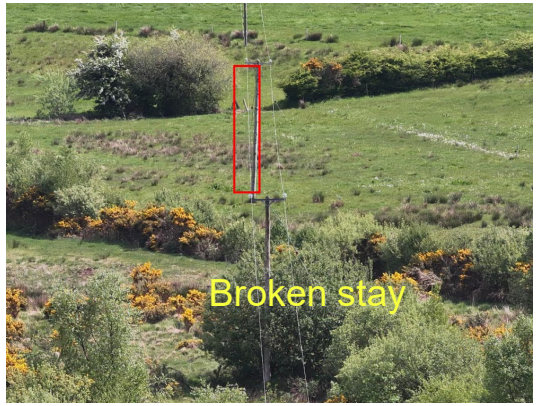
Drone patrol findings May 2025 (post-Storm Éowyn)











Network Issue

↓

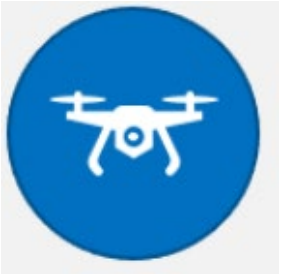
Drone Detection

↓

ESB resolution

Key Takeaways

- ✓ Safety Through Innovation.
- ✓ Empowering People.
- ✓ Climate Resilience.
- ✓ Operational Efficiency.
- ✓ Compliance & Governance.
- ✓ Human Impact.
- ✓ Future Vision.



UAS initiative is not just about drones
— it's about transforming how ESB protect our people, our customers, our infrastructure, and our future.

Thank you.


HSA


ESB
NETWORKS