EU-OSHA Foresight Project

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Seminar on New and Emerging Risks related to OSH

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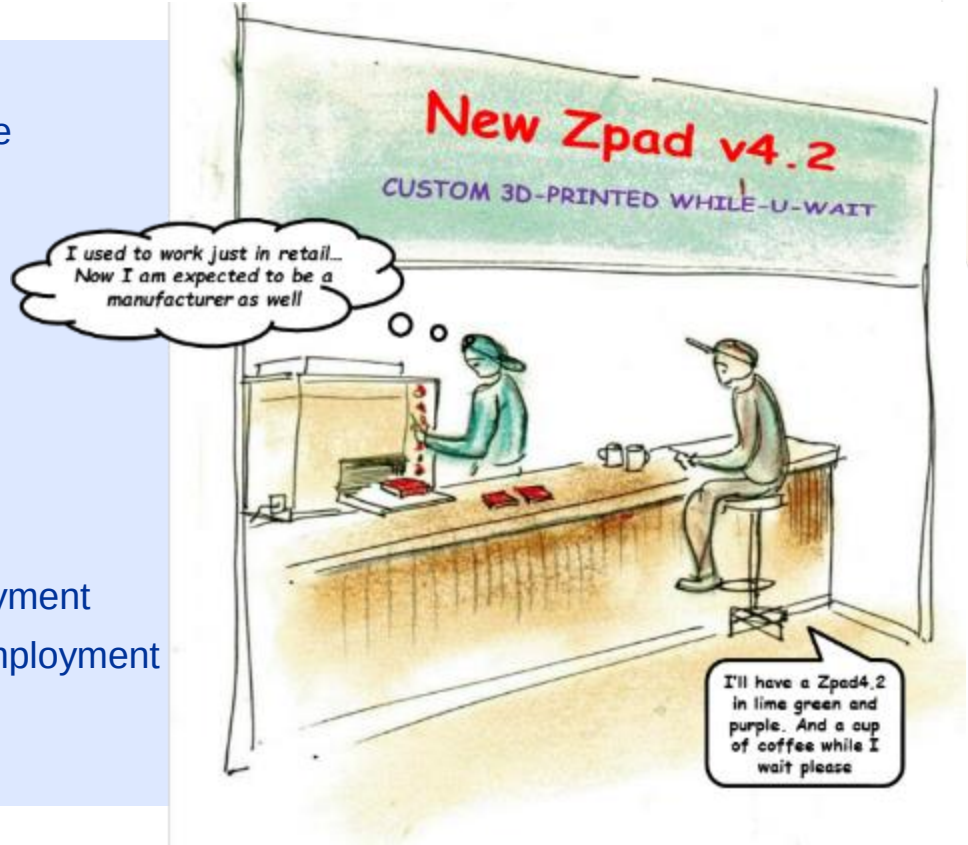
What is shaping the future? Key trends and drivers of change

- Ageing population and workforce
- Increasing migration into and within Europe
- Economic environment
- Greater globalisation
- The European Digital Single Market
- Alternative supply chains and distribution
- Micro and small enterprises
- Data-enabled economy
- Growing employment in the service sector
- New business models and forms of employment
- More part-time, fixed-term or temporary employment



Societal drivers - some evidence from ESENER-2

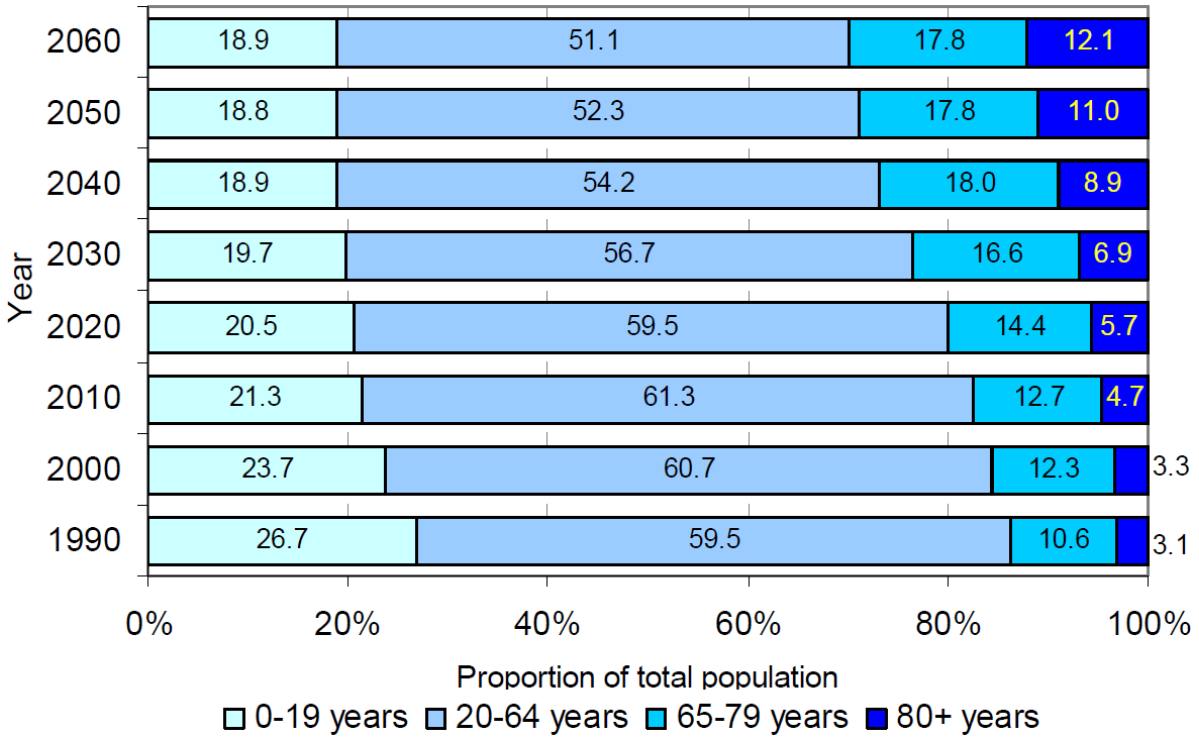
16%

Workplaces in Malta reporting workers that have difficulties understanding the language spoken at the premises (EU-28: 6%)

26%

Workplaces in the Netherlands with workers working from home regularly (EU-28:13%)

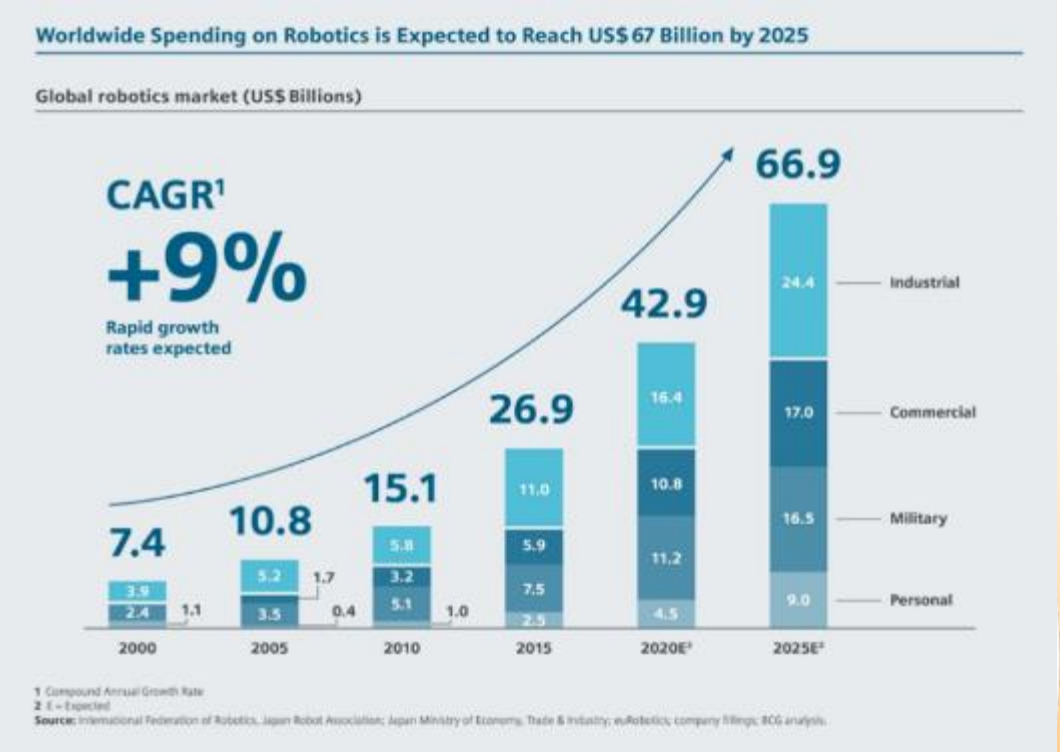
Fewer young and more older workers



Digitalisation as a driver of change

- **Digitalisation influences**
  - what jobs there are
  - what tasks humans will do
  - sectors and industries people will work in
  - how people perceive work
- **New occupations and industries:**
  - eBay, Facebook, You-tube barely existed 10 years ago, now global corporations
  - Since the PC invention, over 1,500 new job titles in occupational classifications (e.g. Data-base Administrator, Web Designer, Cyber-security)
  - 65% of children entering primary school will end up working in new jobs that don't yet exist

(Research from the World Economic Forum)

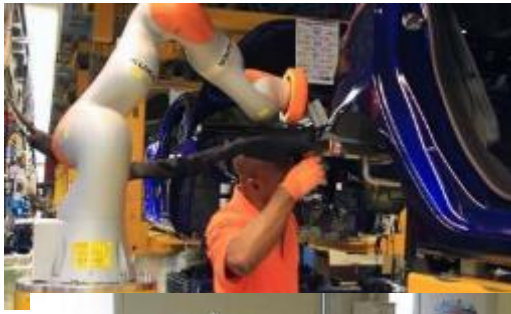


(J P Morgan Chase & Co.)

Technology - What is changing?

- Advanced, collaborative robotics
- Artificial Intelligence
- Communication networks and mobile devices
- Wearables, miniaturisation and bionics
- Virtual and Augmented Reality
- Autonomous vehicles and drones
- Internet of “all things and people”
- Big Data

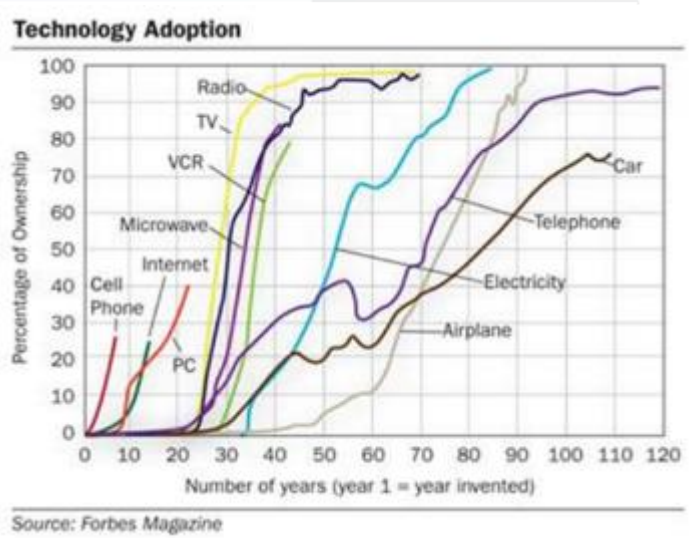
- Robots becoming “uncaged”
- Smart and autonomous systems
- Variety of tasks digitalised and automated
- In ALL sectors



Technologies are diffusing more widely & much faster than in the past

- 119 years for the spindle to spread beyond Europe
- Time taken to reach 50 m users
  - Telephone 75 y
  - Radio 38 y
  - TV 13 y
  - Internet 4 y
  - Facebook 3.5 y
  - Angry Birds app 35 days

Source: Citi Digital Strategy Team



Source: Forbes Magazine

- The volume of global data is doubling every 18 months.
- Global internet traffic in 2016: $1x10^{21}$ bytes / Compared to text in all books written: $1x10^{14}$ (Cisco)
- IoT market estimated growth of 20% per year
- A typical family home could have 500 ‘smart’ devices by 2022 (Gartner)
- 500 billion devices will be connected by 2030, from 13 billion in 2013 (Cisco)

EU-OSHA's project on New forms of work and OSH

- **Foresight "New and emerging OSH risks associated with digitalisation by 2025"**
  - Reports, summary and cartoons available
- **"Protecting Workers in the Online Platform Economy: An overview of regulatory and policy developments in the EU"**
  - Report and summary, and seminar summary available
- **Expert discussion papers on "The future of work" to stimulate debate**
- **Dissemination workshops**
  - 2018: SI, NO + 2019: RO, ES & coming-up in BG, LT, PL, SI

All available at EU-OSHA website:

https://osha.europa.eu/en/emerging-risks/developments-ict-and-digitalisation-work

Expert discussion papers on “The future of work”

- **Crowdwork** - Prof. Huws, University of Hertfordshire, UK (2015)
- **Robotics** - Dr. Adj.Prof. Kaivooja, University of Turku, FI (2015)
- **Additive manufacturing** - Junte, Journalist, NL (2017)
- **Monitoring of workers** - van den Broek, Utrecht University, NL (2017)
- **The future of the (e-)retail sector** - Carter, HSL, UK (2018)
- **Performance-enhancing drugs** - Prof Bloomfield & Dale, Lancaster University, UK, (2018)
- **Management by Artificial Intelligence** - Dr. Moore, Leicester University, UK (2019)
- **Big Data for inspection efficiency** - Dr Dahl, SINTEF Technology and Society, NO (2019)
- **Social innovation in the context of digitalisation** - Saunders, Copenhagen Institute for Future Studies, DK (2019)
- **Exoskeleton** - Dr. Wischniewski, BAuA, DE (2019)

Opportunities for OSH

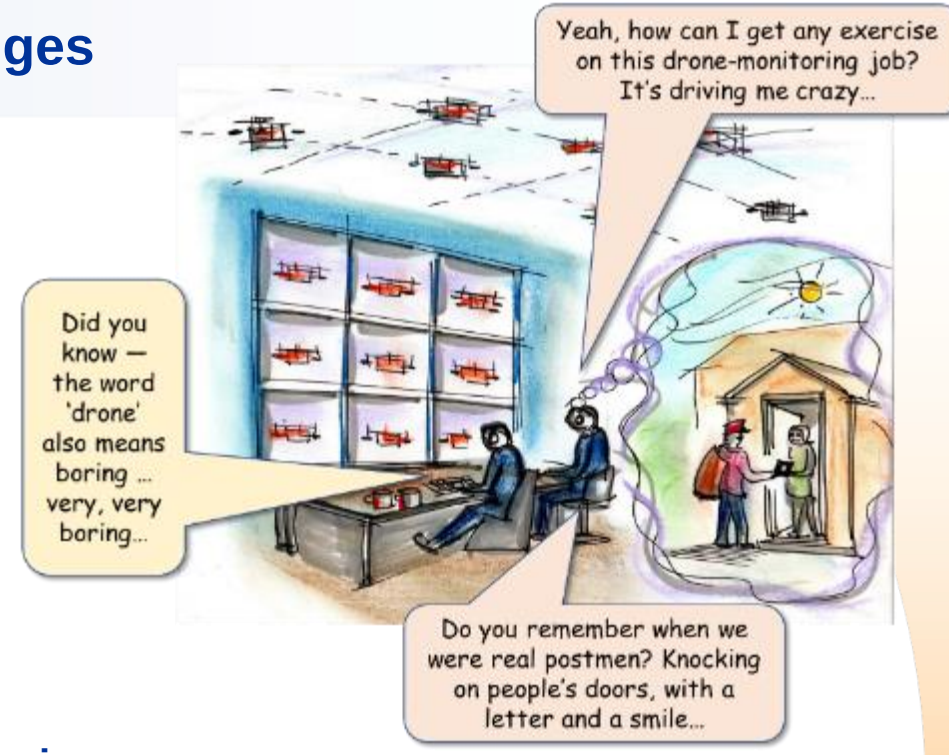
- Robotics removes workers from hazardous jobs
  - maintenance, logistics etc.
- Improves quality of work - automating monotonous/repetitive tasks
- Human-enhancement technologies - exoskeletons
- Access to work for a diverse workforce
- New opportunities for work-life balance
- Monitoring and improving workers' safety and health condition
- Opportunities for OSH training and communication
- Targeted prevention, inspection efficiency and compliance

OSH challenges – Safety

- **Proximity of the robots to the workers**
  - Collisions with the robots
  - Risks from the equipment used by the robots
  - Accidents expected to increase in the short-term
- **Increasing technological complexity**
  - Too much trust in the infallibility of technology
  - Lack of understanding of the underlying processes
- **Unforeseen situations and uses**
  - Possible to foresee ALL situations at the design stage?
  - Incidents outside normal operations e.g. maintenance
  - Workers' acceptance and sabotage
- **Cyber-security and functional safety**

Ergonomics and cognitive challenges

- **Human-Machine Interfaces**
  - Driven by technical feasibility and market, not by users‘ needs
  - Overloading certain body parts?
  - Gesture, voice, eye tracking control is more immediate - safety-critical commands?
- **“Sitting is the new smoking”**
- **Overload …**
  - Cognitive overload due to increasing technological complexity
  - Work / risk intensification
- **vs Underload as reliability on technologies increases**
  - Monotonous work, narrowed job content, de-skilling of work
  - Loss of workers’ skills, errors, accidents
- **Polarisation towards skills / “hollowing out”**



Organisational and psychosocial challenges

- **When your peers are robots**
  - Virtualisation of relationships, loss of social support
  - Loss of motivation and poorer job satisfaction
- **Permanent monitoring of workers**
- **Pressure to perform – at the same level as robots?**
- **Lack of transparency of decisions and loss of job control**
- **Blurring of boundaries work/private life**
- **Ethics and the human-robot team**
  - Who does what, the robot or the worker?
  - Can/will a worker take instructions from a robot-boss?

EU-OSHA's overview of regulatory and policy developments in the Online Platform Economy in the EU

Four broad types of platform used in provision of labour:

1. Non-manual high-skill online workers (e.g. Upwork or PeoplePerHour)
2. Non-manual low-skill online workers (e.g. Clickworker or Amazon Mechanical Turk)
3. Manual driving or delivery workers working offline but managed online (e.g. Uber, Deliveroo, or Lyft)
4. Manual service/maintenance/construction workers working offline but managed online (e.g. Taskrabbit, Helpling or Myhammer)

MyHammer
Gute Arbeit. Guter Preis.

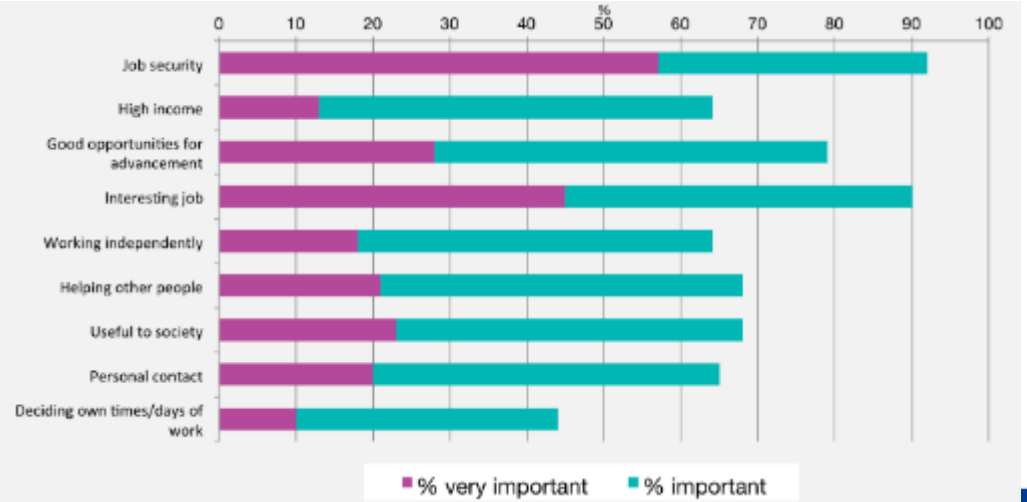
upwork™

Online platforms: Potential benefits?

- **Flexibility**
  - Possibility to combine work/life demands
  - Supplementary income
  - No fixed location
  - Easier access to employment

However…

Perceived importance of different job attributes (*British Social Attitudes Survey No.33*)



- **Hyper-mobile labour**
  - Multiple, simultaneous jobs
- **Job insecurity**
  - Most are actively seeking more regular types of work
  - 92% rate job security as ‘very important’ or ‘important’ in a job

Potential OSH effects of online platform work

- **OSH risks associated with the work activities themselves**
  - Risk of injury, exposure to dangerous substances, ergonomic risks, etc. (particularly in certain types of jobs, e.g. cleaning, transport, construction);

- **Psychosocial risks associated with online work:**
  - Work intensity resulting from continuous real-time evaluation and rating of worker performance
  - Pressure to be friendly, efficient and serviceable at all times
  - Lack of support and risk of isolation
  - Harassment and violence from clients
  - Highly precarious employment

- **Additional risk factors: poor access to OSH services**
  - Poor access to OSH services- training, occupational healthcare and surveillance, labour inspection
  - Less likely to be covered by collective preventive measures
  - General employment law guarantees may not apply

To what extent does/should employment law, including OSH, apply?

- **In most jurisdictions, OSH regulation where an 'employment relationship' exists**
  - Reality of the relationship, subordination/control, nature of work, remuneration?
- **Challenges associated with online platforms**
  - dynamics
  - strategies
  - atypical features
- **Currently, mostly decided in a reactive, case-by-case manner by judiciaries**
- **A variety of regulatory and policy approaches:**
  - Stepping up enforcement of existing rules
  - Application of 'employment' to online platform work
  - New category of 'independent worker' or a presumption of employment
  - Providing specific protection for online platform workers

  ->> France proactive with adoption of specific law providing some basic protection for online platform workers

A challenge to stay abreast of this fast-changing area!

Conclusions – How to help mitigate the OSH challenges?

- **Research and innovation fostering the quality of work**
  - Collaboration between academics, industry, social partners and governments
  - More focus on the human aspects and impact on mental health
- **Need for adapted prevention strategies**
  - User-centred Prevention-through-design approach
  - Training for all actors – incl. OSH training for designers
  - Workers' involvement in the deployment of digital technologies and strategies
  - Risk profiles and Risk Assessment – and opportunities!
- **Can inspectorates make more use of data?**
  - Big data to support targeting inspections & information flows to influence compliance
- **Ensuring workers' rights in the digital world of work**
  - Access to OSH services, incl. training, health surveillance, worker's representation
  - Ensuring workers' and their representatives' access to information
  - Protecting workers' right to privacy
- **Regulation to set a level playing field and guarantee minimum rights at EU and national level**
  - Establish an ethical framework
  - Clarify OSH liabilities and responsibilities

What next at EU-OSHA?

- **2020-2022: Larger OSH overview "Digitalisation and OSH"**
  - Procurement in autumn 2019
- **Potential scope:**
  - Automation of tasks, job designs and OSH (collaborative robotics; e-health, etc.)
  - Monitoring and use of data
  - New forms of management (AI, algorithms, gamification, etc.)
  - Online platform economy:
    - Update of EU-OSHA´s regulatory and policy developments
    - Cooperation with Joint Research Centre and Eurofound (COLLEEM survey)
  - Case studies: OSH practices for new forms of work in the digital world
  - Using ESENER 3: 1st data related to digitalisation end 2019
- **2023-2024/25: EU Healthy Workplaces Campaign on Digitalisation and OSH**

Thank you for your attention!

Find out more about EU-OSHA's foresight projects at