Looking forward to the future forms of work: Anticipating new and emerging risks

International conference
“Occupational Safety and Health in the Changing World of Work"

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Director EU-OSHA

Brdo, 16 June 2017
Safety and health at work is everyone’s concern. It’s good for you. It’s good for business.
European Agency for Safety and Health at Work (EU-OSHA)

The European Union body responsible for the collection, analysis and dissemination of relevant information to serve the needs of those involved in safety and health at work

In Bilbao (Spain), since 1996
Anticipating new and emerging OSH challenges

Background to EU-OSHA’s work:

- A mandate from the Community Strategies for OSH since 2002

EU Strategic Framework on Health and Safety at Work 2014-2020

- Calls on EU-OSHA to “Anticipate possible negative effects of new technologies and changes in work organisation on workers’ health and safety”

- A priority in EU-OSHA’s Multi-annual Strategic Programme 2014-2020
EU-OSHA’s work on Future forms of work and OSH

- Foresight on new and emerging OSH risks associated with ICT by 2025
  - Link to the development of the EU Digital Single Market, a priority of the EU Commission

- Review of policy development in the EU linked to new forms of work intermediated by digital platforms and expected impact on OSH

- Series of Expert Articles on “The future of work”
  - Crowdsourcing, Prof. Huws, University of Hertfordshire, UK (2015)
  - Robotics, Dr. Adj.Prof. Kaivooja, University of Turku, FI (2015)
  - Performance-enhancing drugs, Prof. Bloomfield & Dr. Dale, Lancaster University, UK (2015)
  - Additive manufacturing, J. Junte, Journalist, NL (in progress)
  - Monitoring of workers, E. van den Broek, Utrecht University, NL (in progress)
  - The future of the (e-)retail sector, L. Carter, HSL, UK (in progress)

Available at: https://oshwiki.eu/wiki/Category:Identifying_new_and_emerging_risks
Foresight on new and emerging OSH risks associated with ICTs by 2025

Method: Scenario-building

- **A tool for strategic futures thinking**
  - Doesn’t assume the future is pre-determined, doesn’t demand consensus
  - To provide insight and stimulate debate into ways to shape the future

- **Scenarios of plausible, possible futures:**
  - Help policy-makers gain insights into long-term developments
  - Better understand what decisions could help avoid/encourage these futures

- **Participatory:**
  - EU-OSHA’s stakeholders/policy-makers actively involved
  - Interviews and workshops with multi-disciplinary experts and policy-makers

- **Multidisciplinary**
  - Societal, technological, economical, political context are taken into account

https://singularityhub.com/2016/04/05/how-to-think-exponentially-and-better-predict-the-future/
Foresight on new and emerging OSH risks associated with ICTs by 2025

Technologies are diffusing 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
ICT is a driver of workplace change

- **ICT influences:**
  - What jobs there are
  - What tasks humans will do
  - The 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. Database 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)
<table>
<thead>
<tr>
<th>TECHNOLOGICAL drivers</th>
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<tr>
<td>Robotics and Collaborative robots</td>
<td>Additive manufacturing (3D, 4D and bio-printing)</td>
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<tr>
<td>Artificial intelligence (AI)</td>
<td>Advanced materials</td>
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<td>Internet of things</td>
<td>Augmented reality (AR)</td>
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<td>Big Data</td>
<td>Virtual reality (VR)</td>
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<td>Mobile devices and communication networks</td>
<td>Miniaturisation and Wearables</td>
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<td>Cloud computing</td>
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<td>Autonomous vehicles</td>
<td>Direct brain to computer</td>
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<td>Drones</td>
<td>Cybersecurity</td>
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SOCIETAL drivers

- **Workforce demographics**
  - Shortage of an active workforce in the EU, generational differences
  - Diverse workforce

- **Inequality and polarisation**

- **ICT knowledge and skills**
  - Gaps in specific ICT skills
  - Quickening of knowledge transfer and of knowledge obsolescence

- **Online environment and attitudes**
  - Public attitudes towards ICT development and ethics, on-line privacy
  - Violence and bullying

- **New working patterns - and their regulation (?)**
  - Flexible working patterns, virtual workplaces, crowd-working
  - Changes to HR management
ECONOMIC drivers

- **Economic environment**
  - Globalisation and EU economy
  - Re-shoring manufacturing vs. Offshoring of knowledge work

- **Changing industry structure**
  - Increase in Micro and SMEs
  - Rise of the entrepreneur
  - Effect of ICT on other sectors
  - Alternative distribution chains
  - Sharing economy

- **Data-enabled economy**
  - Economic value of data
  - Knowledge economy

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I used to work just in retail... Now I am expected to be a manufacturer as well.

I'll have a Zpad4.2 in lime green and purple. And a cup of coffee while I wait please.

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Four future scenarios

Economic growth and technology innovation

- Scenario 1: Evolution
- Scenario 2: Transformation
- Scenario 3: Exploitation
- Scenario 4: Fragmentation
Future forms of work: **Opportunities for OSH**

**Robotics:**
- Removes workers from hazardous jobs:
  - Maintenance, logistics etc.
  - Drones to avoid work at height or in confined spaces
- Improves quality of work - automating monotonous/repetitive jobs
- Human-enhancement technologies - exoskeletons

**Digitalisation:**
- New opportunities for work-life balance
- Access to work for a diverse workforce
- New opportunities for OSH communication
  - sharing OSH information, providing OSH online training (e.g. massive open online courses, use of social media)
OSH Challenges

Working with robots and Artificial Intelligence

- Ergonomic and safety of Human-Machine Interfaces

- Increasing “technological” complexity
  - Too much trust in the infallibility of technology
  - Lack of understanding of the underlying processes

- De-skilling of work

- Pressures to perform - at the same level as robots?

- Team organisation
  - Who does what, the robot or the worker?
  - Can/will a worker take instructions from a robot-boss?

- “Peers” are robots –social support

- Electromagnetic fields?
OSH Challenges
Digital work and the 24/7 global economy

- **Ergonomic risks**
  - Intensive use of ICT on devices/environments not ergonomically designed for (intense) work, Static work

- **Available all the time, including at unsocial times**
  - Blurring of boundaries work-life balance
  - Work intensity - Interruptions and unpredictability of demand at short notice
  - Dependence to technology and “Fear Of Missing Out” syndrome
  - Constant pressure for competitive self-promotion on the web

- **Virtualisation of work relationships, feeling of isolation**

- **What and how are data collected, shared and used?**
  - Big Data: only today 2.5 quintillion bytes of data will be generated

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Your boss is watching you: Companies fit staff with tracking devices to they can follow their movements night and day

- The credit card-sized devices created by
- They analyse sleep and speech patterns, scan for proximity to others and measure physical activity of the wearer

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OSH Challenges

Digital work and the 24/7 global economy

- ‘Gig economy’, ‘platform workers’, ‘zero hours’
  - Fragmented, dispersed and diverse workforce
  - Multiple jobs – at least 1 in 3 are ‘independent workers’ out of necessity, not choice
  - Unclear status and responsibilities
  - Evaluation of worker’s performance and payment – clear?
  - New forms of employment fall out of the scope of the OSH legislation
  - OSH monitoring systems have not been adapted
  - Lack of data and statistics about workers in new generation jobs
  - Race to the bottom of working conditions and OSH – Undercutting of “good employers”
Thank you!

More information in 25 languages

http://osha.europa.eu