Digital work and Occupational Safety and Health (OSH)

COST Event “Policy implications of digital work”, 9th June 2016, Brussels
Speaker: Brenda O’Brien
Project Manager: Emmanuelle Brun
EU-OSHA’s work on Digital work and OSH

- Series of Expert Review Articles on the Future of Work:
  - “Crowdsourcing and OSH” by Prof. Ursula Huws (2015)

- “Foresight on new and emerging OSH risks associated with ICTs and work location by 2025”
  - 2 year project – started March 2016
Background

- **EU Strategic Framework on Health and Safety at Work 2014-2020**
  - To anticipate potential negative effects of new technologies and changes in work organisation on workers’ health and safety

- **EU-OSHA’s 2014-15 Scoping study on new and emerging risks:**
  - Highest ranking for “The impact of ICT and work location on OSH” received the highest ranking

- **EU Digital Agenda**
**Expert review article “Crowdwork and OSH”**

- **Challenge:** A variety of employment model for paid labour – some key variables:

<table>
<thead>
<tr>
<th>Professional status</th>
<th>Work Mode</th>
<th>Place of work</th>
<th>Employment Status</th>
<th>Final client</th>
<th>Main job or supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>Online</td>
<td>Home</td>
<td>Employee</td>
<td>Individual</td>
<td>Main job</td>
</tr>
<tr>
<td>Clerical</td>
<td>Offline</td>
<td>Empl. site</td>
<td>Selfempl.</td>
<td>Company</td>
<td>Secondary job</td>
</tr>
<tr>
<td>High-skill</td>
<td></td>
<td>Other</td>
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</tr>
</tbody>
</table>

- Elance
- oDesk
- Clickworker
- Taskrabit
- Wonolo
- Starbucks
- Mila
- Axiom

Notes:
- * indicates the presence of that variable.
Opportunities and risks

Opportunities

- Enables access to work for a diverse workforce and people who would otherwise be excluded (incl. young people, women, people with disabilities, people in developing economies)
- Provides new opportunities for flexible ways to combine work and private life
- Reduces risks for employers and customers
- Enables low-cost entry into market for new enterprises or firms trying out new products or services
- Enables social innovation

Risks

- Lack of training – risk of substandard / dangerous work
- Precariousness
- Race to the bottom (undercutting of good employers)
- Health and safety risks to workers, the general public as well as customers
- Lack of regulation may lead to criminal activity
- Unravelling of national / EU regulatory environment
Expert review article “Crowdwork and OSH”: A variety of OSH challenges

- **Ergonomic & Physical risks to online workers**
  - Intensive use of ICT in environments not ergonomically designed for work

- **Ergonomic & Physical risks to offline workers**
  - Most hazardous jobs performed by crowdworkers
    - Construction, tree surgeons, electricians, cleaning etc.
  - Lack of safety equipment and clothing

- **Psycho-social risks, linked *inter alia* to:**
  - Precariousness
  - Work intensity
  - Unpredictability of demand at sometimes short notice
  - Blurring of boundaries work-life balance
  - Lack of clarity over evaluation of worker’s performance and payment

- **Lack of training and access to OSH services**
  - E.g. traumatic stress due to exposure to pornographic or violent media images

- **Interaction of impacts from multiple jobs**

- **Challenge to link exposures to effects**
Challenges for OSH policy-makers

- What is the legal status of online work exchange platforms?
- Who is the employer?
- Who is responsible for OSH?
- Ambiguities/gaps relating to coverage by social and OSH European Directives and national regulations
- Ambiguities/gaps relating to insurance coverage
- Ambiguities/gaps relating to legal and professional liability
- Difficulty of disentangling risks to workers from risks to consumers and to general public
Stimulating debate among OSH policy-makers

- Article discussed with EU-OSHA’s national Focal Points (06/15) and Governing Board (01/16)

- Consolidated article published 19/11/15

- Also available in our OSHwiki
Foresight on new and emerging OSH risks associated with ICTs and work location by 2025

- **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 to help policy-makers to:**
  - Gain insights into long-term developments
  - Better understand what decisions could help avoid/encourage these futures

- **Participatory: involves EU-OSHA’s stakeholders/policy-makers**
  - Prevention and Research Advisory Group (PRAG) informed and involved
  - Interviews and workshops with policy-makers

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

<table>
<thead>
<tr>
<th>Work packages</th>
<th>Start</th>
<th>End</th>
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<tbody>
<tr>
<td>1- Key trends and drivers of change</td>
<td>February 2016</td>
<td>October 2016</td>
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<tr>
<td>2- Scenario development and testing</td>
<td>November 2016</td>
<td>August 2017</td>
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<tr>
<td>3- Dissemination and promotion workshops (up to 6)</td>
<td>Q4 2017</td>
<td>2018</td>
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- **Contractor:**
  Health and Safety Laboratory, SAMI Consulting & Futurizon

- **Final report:** End 2017
WP1: Key trends and drivers of change

- **Duration:** February – October 2016

- **Task 1: Review of information on trends and drivers**
  - 93 trends and drivers of change identified through desk research
  - Socio-cultural, Economic, Environmental, Technological and Political trends

- **Task 2: Consolidation of the draft list**
  Multidisciplinary participants from public and private sector + PRAG involvement
  - 15 - 25 semi-structured phone interviews - June 2016
  - Complemented by a public web survey - 13th June 2016 – **TAKE PART!**
    
  - Final electronic Delphi to rank the drivers - July 2016

- **Task 3: Selection of the key drivers**
  - Analysis based on Impact/uncertainty matrix
  - Mini-workshop with project team, EU-OSHA and experts (mid-Sept. 2016)
SOCIAL drivers - Examples

- **Demographics and characteristics of the workforce**
  - **Population changes** – while the global population is rising, the EU population is slightly falling and there is a shortage of an active workforce
  - **Ageing workforce**
  - **Increasing migration into EU**
  - **Generational differences**: From the “digital natives”; to those working for some time, coming close to retirement age or already retired, with very differing attitudes to hierarchical organisational structures, sharing information online and ease of using ICT at work
  - **More women in the workforce** – who tend to be found more in flexible working patterns
  - **Increasing number of workers with chronic and complex health problems** - MSDs, cancers, mental health
  - **Increased inequality and polarisation** – due to the benefits from technological innovation not spread evenly across socio-economic groups with low paid unskilled workers at one end of the spectrum and a ‘digital elite’ at the other.

- **Employment patterns**
  - **Flexible working patterns** – flexible working hours; part-time (voluntary and in-voluntary); zero-hours’ contracts (or on-demand workers); shorter-term temporary contracts; self-employment; Crowd-work; Home working; mobile working.
  - **Virtual workplaces** – working online anywhere and anytime such that location is irrelevant.
  - **Fluid co-working spaces** - shared physical work spaces where different individuals are generally not employed by the same organisation.
  - **Changes to HR management** – from surveillance and monitoring of workers to flatter organisational structures where workers are supervised less, have more autonomy and are judged by innovation and output

- **Sub-category: Skills**
  - Increase in basic ICT skills
  - Gaps in specific ICT skills
  - Access to online education
  - Quickening pace of knowledge transfer
  - Life-long learning
  - Job mortgages for training

- **Sub-category: Public attitude**
  - Attitude to and awareness of risk
  - Attitude to online privacy
  - Attitude to and acceptance of ICT development
TECHNOLOGICAL drivers - Examples

- Advances in computing power and speed
- Technical challenges for ICT - limited electromagnetic spectrum, availability of energy, types of transistor and battery charge-life
- Internet of things
- Big data
- Artificial intelligence (AI)
- Automation
- Collaborative robotics
- Industry 4.0 - ‘Internet of Things’ and machine to machine communication is enabling ‘lights out’ manufacturing (without human involvement)
- Additive manufacturing - also called rapid manufacturing or 3D printing
- Bionics
- Drones
- Wearables - miniaturisation allows devices to be worn on the person or incorporated into clothing
- Augmented reality (AR)
- Virtual reality (VR)
- Immersive communication - uses ICT technologies to create natural experiences and interactions with remote people and locations
- Interfacing via other human senses – gesture-control, eye tracking technology, speech recognition and instantaneous translation
- Direct brain to computer - non-invasive computer-to-brain interfaces including trying to produce perceptions through stimulating the brain
- Social media
- Cloud computing
- Open intellectual property movement
- 5G (and beyond) mobile technology
- Cybersecurity
- Advanced materials
ECONOMIC drivers - Examples

- **Sub-category: Macro-economic environment**
  - Rising globalisation
  - EU growth since financial crash of 2008
  - Re-shoring manufacturing - combination of ICT advances in manufacture and concerns about quality and rising costs
  - Offshoring of knowledge based work
  - Increasingly well-educated Asian workforce
  - BRIC countries - fastest growing and largest emerging markets
  - **Economic value of data** - in order to create a data-enabled economy there is a need for data to be valued economically and included on balance sheets. Data sets could be traded through a regulated framework.
  - **Insurance** - if perfect data becomes available there is the possibility that low-risk businesses may no longer feel it necessary to purchase insurance.

- **Sub-category: Changing industry structure**
  - **Increase in Micro and Small and medium-sized enterprises**
  - **Rise of the entrepreneur** - digital technologies help the entrepreneur of the future as they allow low start-up cost and fast scale-up.
  - **Effect of ICT on other sectors** - advances in ICT will continue to have an impact on the amount and types of jobs accessible and the skills needed in different sectors.
  - **Alternative distribution chains** – increasing sales direct to consumers, between peers and consumer to consumer.
  - **Increase in e-commerce**
  - **Increasing knowledge economy**
  - **Rise in the service sector**
  - **Sub-contracting** - the growth of the self-employed and increased globalisation tends to drive a growth in sub-contracting.

- **Sub-category: New business models**
  - **The Sharing economy**
  - **Peer-to-peer finance and crowd-sourced funding** – increasingly allow innovators to get their inventions to market
  - **Servitisation** - where the service provider owns the product that provides a service rather than the consumer of the service
ENVIROMENTAL drivers - Examples

- **Energy** - ICT currently uses a significant amount of the world’s electricity, generating approximately 2% of global carbon dioxide emissions. ICT development may be effected by energy shortages that could occur if innovations in energy generation are not sufficient.

- **Limited supply of rare earth metals** - rare earth metals are essential in many ICT-based technologies. There are increasingly fewer levels worldwide and China, as a producer has restricted exports.

- **Circular Economy** - waste ICT equipment could become increasingly seen as a valuable commodity as a raw material for new ICT equipment.

- **Disease** - in a more connected world and also because of climate change, the risk of pandemics and diseases arriving in Europe from other parts of the world becomes higher.
POLITICAL drivers - Examples

- **Sub-category: The political agenda**
  - The European digital single market - is one of the European Commission’s ten priorities. A digital single market in Europe could create hundreds of thousands of jobs and bring 415 Billion Euros to the EU economy each year.
  - e-Government - The EC e-government action plan will modernise digital public services
  - Security and privacy - two sides of the same coin, as governments believe they need to monitor internet communications more thoroughly to prevent terrorism, the public begins to become more concerned about its privacy.
  - Investment in education and employment initiatives - It will be increasingly difficult for Governments to find funds for education and employment initiatives due to competing demands for expenditure.
  - Control of migration - the recent surge in migration from the Middle East and Africa has led to major re-thinking of immigration policies across Europe.
  - Regulation of new working patterns – many of the new working patterns are not well served by existing regulations.
  - Governance of the internet - as internet use has increased there has been a corresponding rise in its regulation.

- **Sub-category: Instability**
  - Terrorism and war - terrorist attacks in European capitals cause a reduction in travel and a concern about living/working in large cities. Generally these effects wear off after a while, but if attacks were to increase in frequency and severity then there could be a noticeable effect on patterns of behaviour.
  - Increasing geopolitical volatility
  - Blurring of boarders - increased globalisation, the rise of digital work platforms and an increasingly networked world means that borders may become blurred or even cease to exist.
WP2: Scenario-building, analysis and conclusions

- **Duration:** November 2016 – August 2017

- **Task 1: Development of Base scenarios**
  - Cross impact analysis of the key drivers to define scenario axes
  - Selection and generation of the most worthy base scenarios
  - In a mini-workshop with project team, EU-OSHA and selected experts

- **Task 2: Development of OSH scenarios**
  - Multidisciplinary, participative workshop with experts and PRAG
  - In BXL or Bilbao planned for March 2017

- **Task 3: Scenario visualisations**
  - Story board based on vignettes for each scenario

- **Task 4: Testing the use of scenarios for policy makers**
  - Workshop with 30 policy-makers incl. PRAG involvement
  - Q2 2017
WP3: Dissemination and promotion workshops

- With (national) policy makers:
  - To disseminate the findings
  - To discuss priorities and policy implications of the findings
  - To promote the use of the scenarios as a tool for policy-making

- Between Q4 2017 and Q4 2018
Thank you for your attention!

Take part in our web survey on key drivers of change from 13th June: https://osa.europa.eu/en