Working in the Digital World – Focus: Human Being

Nancy 2017
Federal Institute for Occupational Safety and Health (BAuA), directly subordinated to the German Federal Ministry of Labour and Social Affairs

- Locations in Dortmund, Berlin, Dresden and Chemnitz
- Total Budget: 70,3 m€ (2017)
- More than 700 employees, therefrom 120 researcher
- Own research and development laboratories
Research focus in the long run

- **Work-related diseases** and their **multifactoral genesis** of e.g. work-related disorders of the musculo-skeletal and cardio-vascular systems

- **Mental workload** against the background of **new types of work**.

- The effects of **new technologies on health and safety at work** e.g. nanotechnology and new information and communication technologies like new types of man-machine-interactions.
Theses:
Working in the Digital World comes along with…

…higher Flexibility of Working Time and Working Place

…increasing Use of Innovative and Digital Technologies

…Challenges regarding Physical and Mental Health of workers
In former times: Clear distinction

- Working Time
- Rest Period
…melting borders
Working time and rest period

Working Time
- Long Working Hours
- Pauses
- Shift Work
- Working on Weekends
- Flexible Time

Rest Period
- Work-Life-Balance
- Mobility
- On-call Work / Duty
- Detachment
Facts and figures: What statistics tell us...

- 2 of 3 persons work as well Saturdays
- About one quarter of the interviewees disclaim regular pauses (due to working issues)
- Atypical working times belong to the every day business of employees, however this increased only slightly
- 2 of 5 Personen frequently have problems to combine working and private life.

Source: Stressreport 2012
To sum up: Working Time and Working Place

• Working in the digital word contributes to further increase the transition to flexible working hours and places. At the same time also the intensification of work further increases.

• An increase in longer and more flexible working times, mobility requirements and prolonged availability is expected.

• At the same time it is observed that pauses are dispensed in case of high working intensity.

• Detachment as well as work-life balance are getting more and more complicated due to these developments.
What are the effects?

In our project „Mental Health in the World of Work“ we analyzed the effects of working time on mental health:

• A good design of working time is linked up with better mental health

• Further links arise from recreation within as well as beyond working time

• Scheduling, controlling and predicting requirements of work becomes more and more important

• Generally significant links to other working condition factors exist. Especially to the factors work intensity, work tasks and leadership
Theses:
Working in the Digital World comes along with…

...higher Flexibility of Working Time and Working Place

...increasing Use of Innovative and Digital Technologies

...Challenges regarding Physical and Mental Health of workers
Research in the context of Ambient Intelligence and Industry 4.0

Chances ?
Riscs ?

Smart office
Wearable IT

Bildquellen: Fraunhofer IAO Daimler AG
Working in the Digital World means…

• …working with machines and equipment provided with Information- and Communication Technology (ICT)
  • to communicate with each other and the environment (→ Internet of Things, Ambient Intelligence; Ubiquitous Computing)
  • configure itself and save information
  • are decentralised organised by themselves

BASIS: RFID, sensors and actors with intelligent components
• Multimodal human-machine-interface (touchdisplay; voice and gesture control)
• Merging of real (physical) and virtual world (Cyber): Cyber-Physical Systems (CPS)

It is important to recognize that the aim is to optimize the work system and not to reduce stress
Theses: Working in the Digital World comes along with...

...higher Flexibility of Working Time and Working Place

...increasing Use of Innovative and Digital Technologies

...Challenges regarding Physical and Mental Health of workers
Facts and figures: What statistics tell us…

- Differences in reorganised and non-organised enterprises are particularly obvious regarding "strong pressure on time and performance";
- "Disturbances/Interruptions" as well as "to look after various tasks at the same time".

Source: Stressreport 2012

BIBB-BAuA-Workforce Survey 2011/2012
### Preservation and Promotion of Physical and Mental Health and Capability

<table>
<thead>
<tr>
<th>Key Issues in the Digital World</th>
<th>BAuA’s Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Possible Reduction of Physical Work Load</td>
<td></td>
</tr>
<tr>
<td>✓ Repetitive and Deskilling Work</td>
<td></td>
</tr>
<tr>
<td>✓ Increasing Physical Inactivity</td>
<td></td>
</tr>
<tr>
<td>✓ Developing Measures to Evaluate Repetitive Working Processes</td>
<td></td>
</tr>
<tr>
<td>✓ To evaluate and to Improve Measures Aiming at Raising Activity</td>
<td></td>
</tr>
</tbody>
</table>

| ✓ Growing Information Flood |
| ✓ Unpredicted Work Tasks |
| ✓ Working Interruptions, |
| ✓ Time Pressure and Pressure to Perform |
| ✓ To Close the Lack of Knowledge how such Working Condition Factors affect Mental Health |
| ✓ Identify effective Ways of Work Design |

| ✓ New digital Technologies require new Cognitive Abilities |
| ✓ To look for Factors who might influence Cognitive Abilities in a Positive Way. |
Thank you very much for your attention!