

# 10th International Conference on the Prevention of Accidents at Work

TS 1.1.1 Digitalisation

Digital manufacturing – challenges for occupational safety  
and health (OSH) due to digital transformation

Introduction: Hans-Jürgen Bischoff

Presentation: Christian Werner



# ISSA – International Social Security Association

Special Commission on Prevention of occupational risks – with 14 Sections:

[www.issa.int/en/communities/tc-ap/about](http://www.issa.int/en/communities/tc-ap/about)

**Specific information on Section Machine and System Safety**

[www.safe-machines-at-work.org](http://www.safe-machines-at-work.org)


General information about ISSA:

<https://ww1.issa.int/>



# ISSA – Section Machine and System Safety

## Control Devices



Detect and consider developments in the field of control devices concerning safety and security of machines

[Learn more](#)


## Digital Manufacturing



Challenges from digital transformation for the system and its elements man-machine-environment

[Learn more](#)


## Explosion Protection



Evaluation of explosion risks and classification of measures for machines, conveyors and modularization of plants

[Learn more](#)


## Human factors, ergonomics and safe machines



Human factors and ergonomics design requirements regarding occupational safety and health and emphasising future work systems

[Learn more](#)


## Stop defeating of safeguards on machinery



Specific information directly accessible to the parties involved in this topic: manufacturers, suppliers and users of machinery

[Learn more](#)

## General information



Here you find information on membership and members

[Learn more](#)

# ISSA – Section Machine and System Safety

## Project Group Digital Manufacturing

- Discuss relevant points and give practical examples and advice on the following topics:

### Smart Human



Human Machine Interface,  
Wearable Computing  
Personal Devices  
...

1

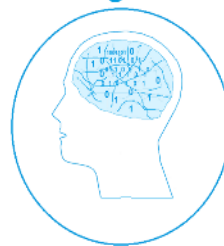
### Cloud-Internet



Cloud Computing,  
Internet of Things,  
M2M, Remote Access  
...

2

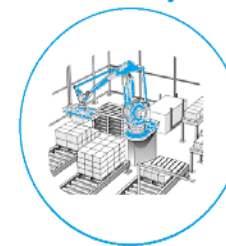
### Artificial Intelligence



Artificial Intelligence,  
Assistance Systems,  
Machine Learning  
...

3

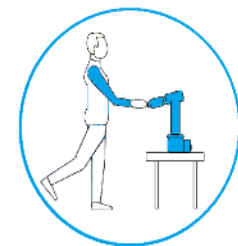
### Digital Factory



Virtual Reality,  
Augmented Reality, MR  
Virtual Commissioning  
...

4

### Robots



HRC, Mobile  
Robot, Autono.  
Vehicles  
...

5

## ISSA – Section Machine and System Safety

Symposium No. 17  
“OSH challenges for manufacturing  
in the digital age”

You are welcome to submit an  
abstract: <https://www.safety2020canada.com/>

XXII World Congress on  
**Safety and Health**  
at Work 2020



4-7 October 2020. Toronto, Canada

# ISSA – Section Machine and System Safety

## Project Group Digital Manufacturing

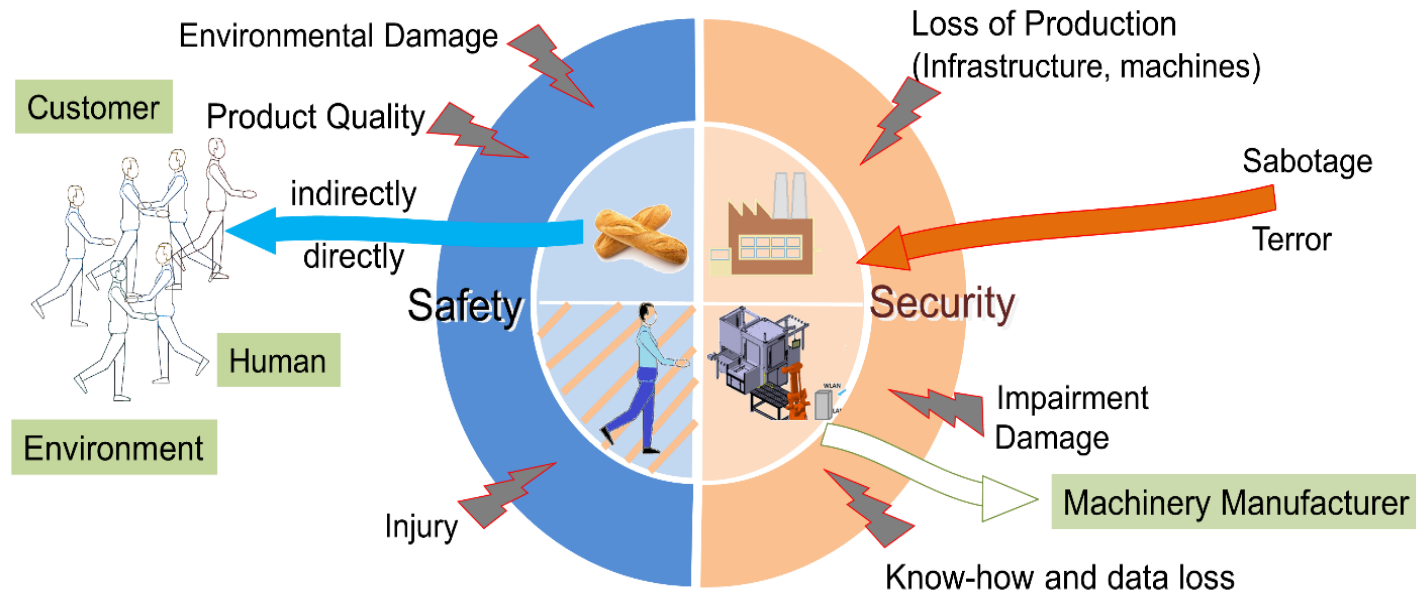
- **Digital transformation – effects on OSH in manufacturing**
  
- **Main target group: SMEs**
  
- **Participants:**
  - AUVA
  - BGN
  - IFA
  - INAIL
  - SUVA

# ISSA – Section Machine and System Safety

## Project Group Digital Manufacturing

### ■ Topics to consider – Safety&Security

#### Cyber attacks with different strategies



## **ISSA – Section Machine and System Safety**

**Project Group Digital Manufacturing**

**Fact Sheets on cyber security**

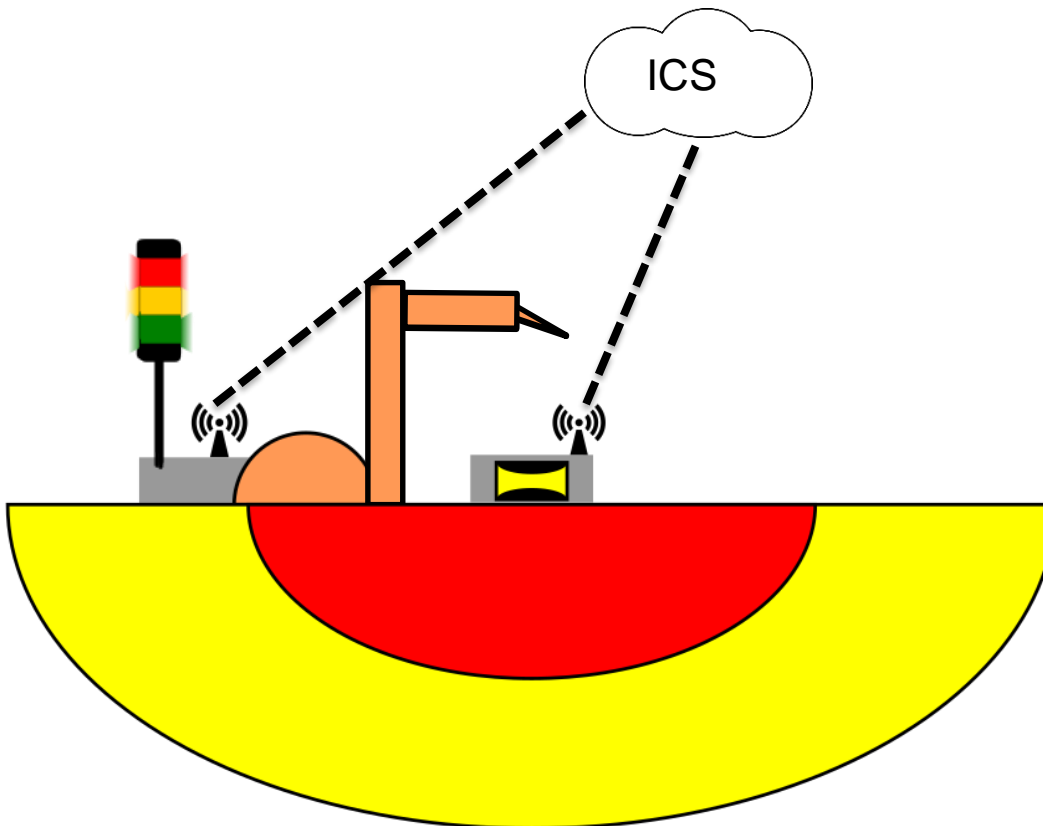
**Topics:**

- **“Safe password” - How to make passwords safer/stronger?**
- **“Up-dates” - How to make correct and safe up-dates?**
- **“Human aspects” How to consider the human aspects?**
- **“Remote access control” - What is a safe way to do remote access control?**
- **“Digital manufacturing and related risks” - What risks occur from digital manufacturing?**



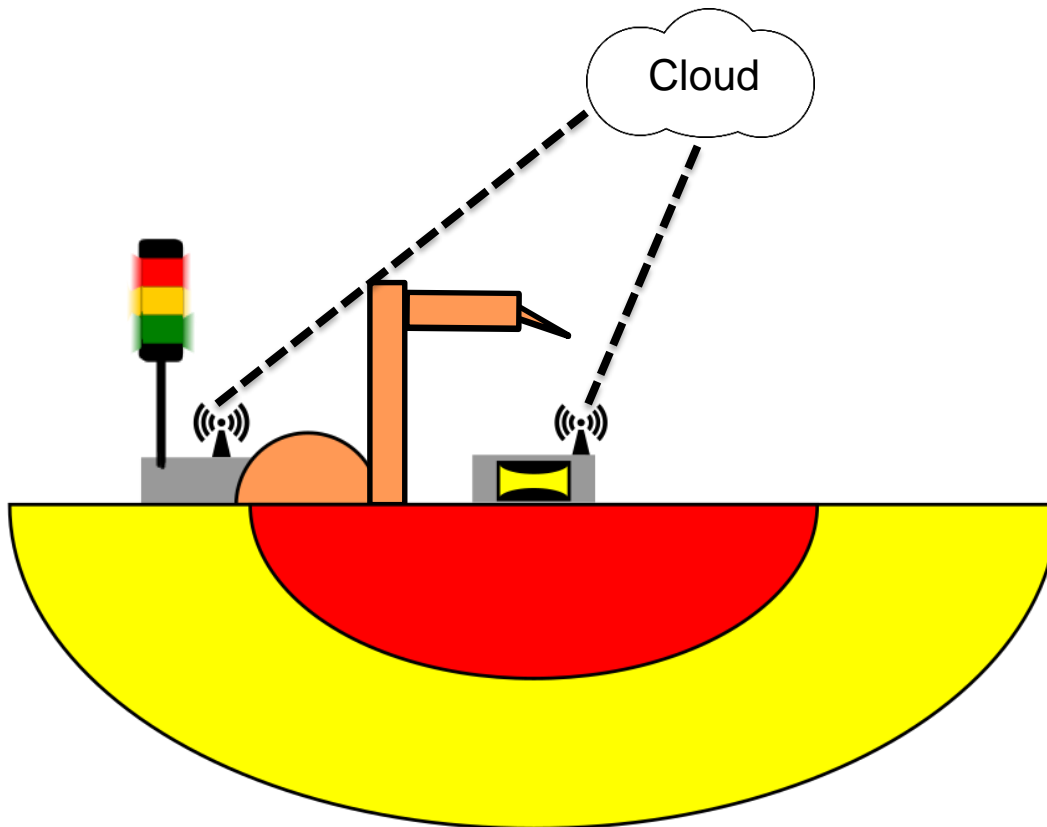
## IFA – institute for occupational safety and health

- Topics to consider – 5G / AI / Clouds in a digital factory



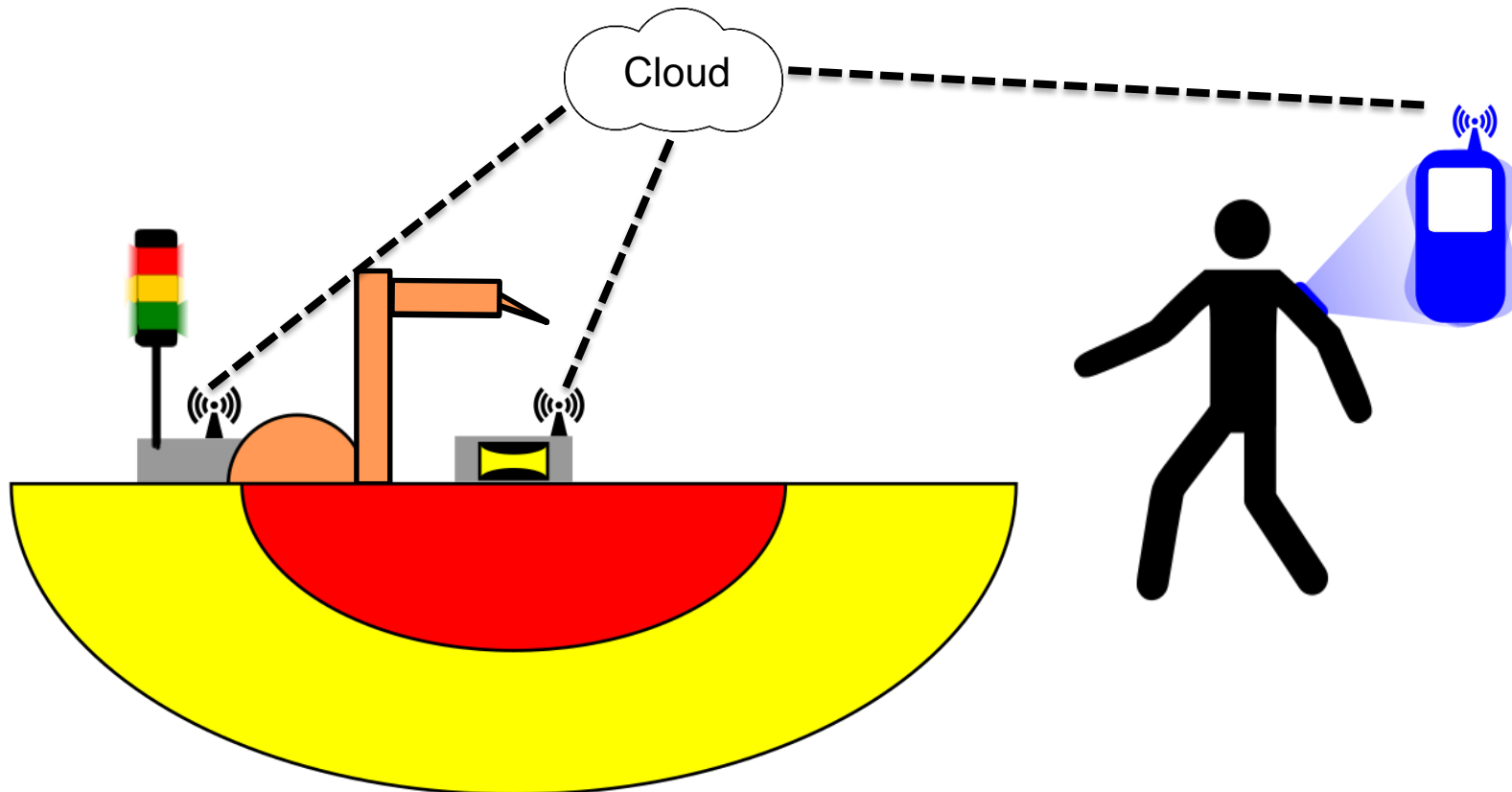
## IFA – institute for occupational safety and health

- Topics to consider – 5G / AI / Clouds in a digital factory



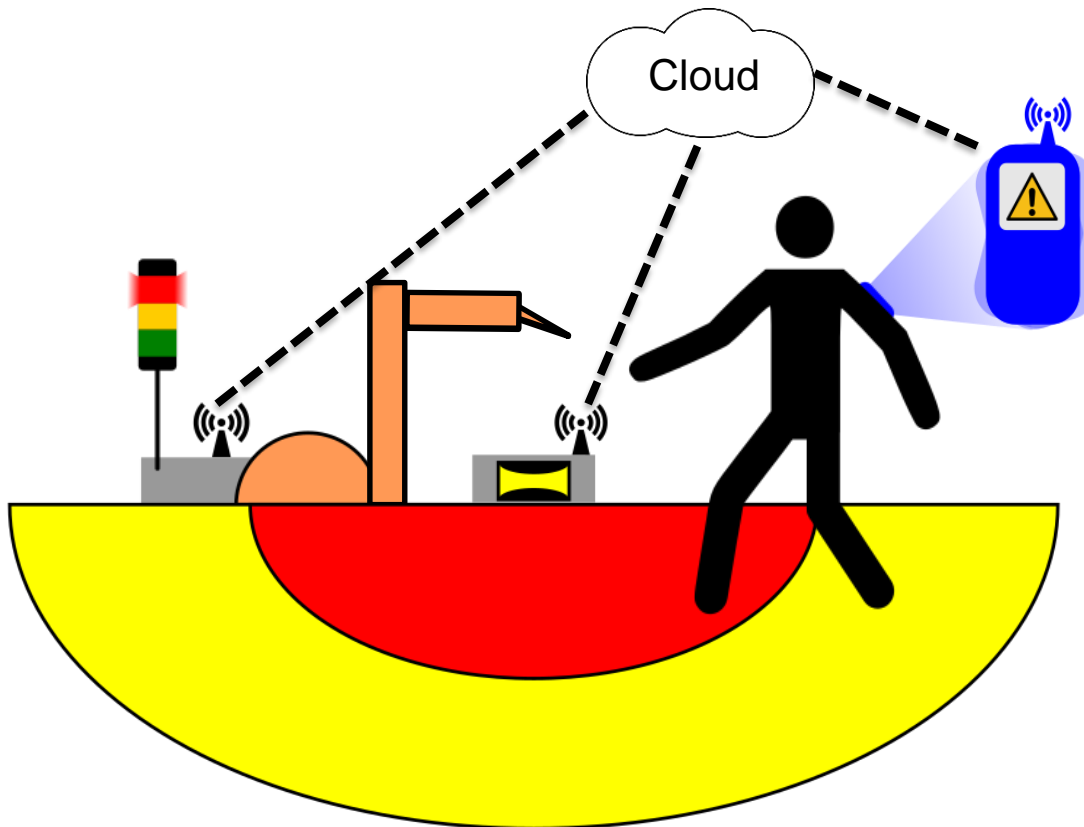
## IFA – institute for occupational safety and health

- Topics to consider – 5G / AI / Clouds in a digital factory



## IFA – institute for occupational safety and health

- Topics to consider – 5G / AI / Clouds in a digital factory



## IFA – institute for occupational safety and health

- **Challenges to consider – 5G / Clouds in a digital factory**
  - Guarantee a safe operation
  - An increasing of latency (if necessary) must be considered under security aspects
  - Pay attention to EMF radiant
  
- **Challenges to consider – Artificial Intelligence**
  - Where can an AI algorithm be used
  - Certification of an AI algorithm (over lifetime)
  - *General Data Protection Regulation*

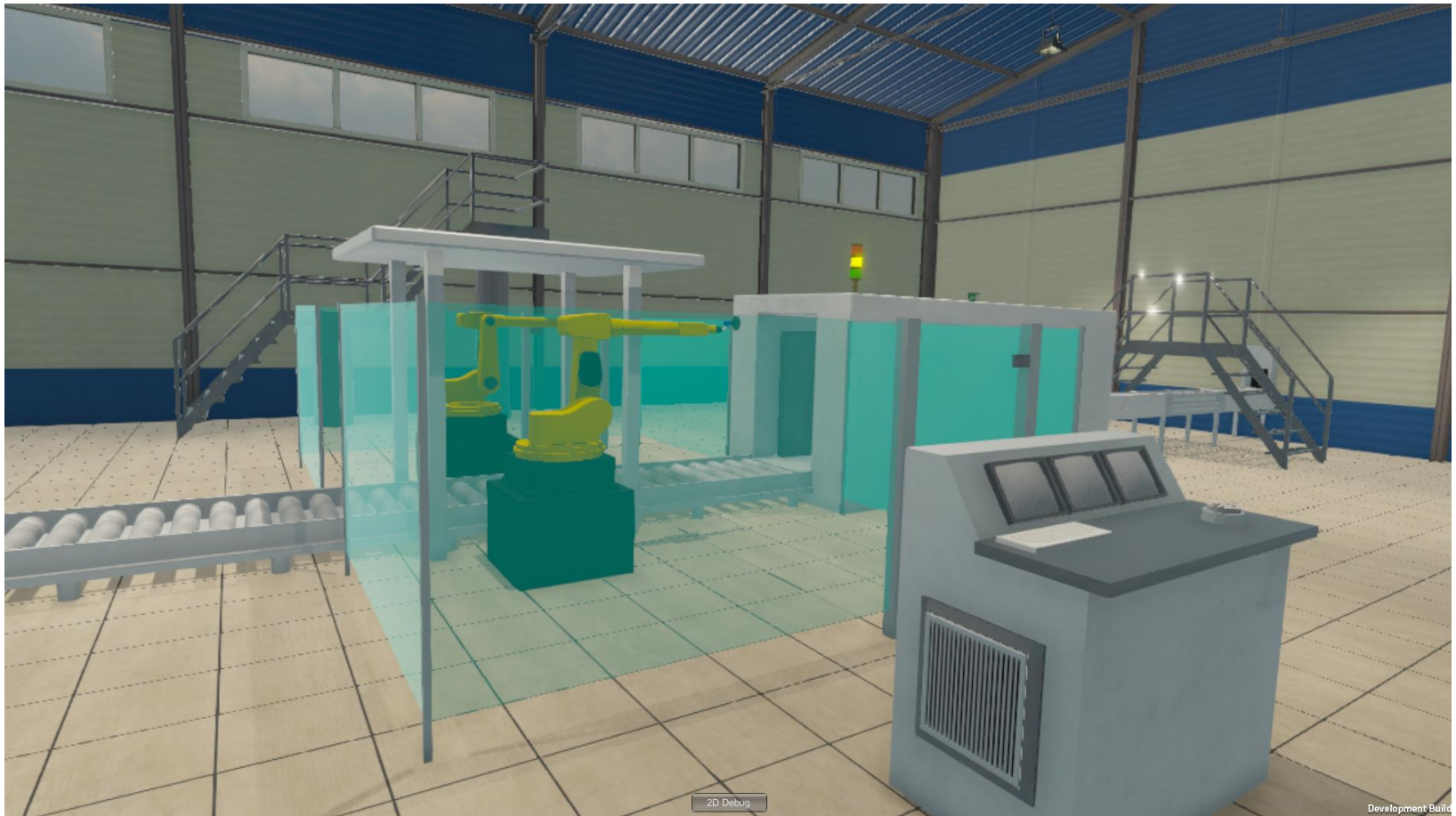
# IFA – institute for occupational safety and health

## ■ Topics to consider – Use of AR/HMD



# IFA – institute for occupational safety and health

## ■ Topics to consider – Use of AR/HMD



# IFA – institute for occupational safety and health

## ■ Topics to consider – Use of AR/HMD





## IFA – institute for occupational safety and health

- **Challenges to consider – Use of AR/HMD in a digital factory**
  - Ergonomic aspects
  - Pay attention to EMF radiant
  - Battery safety

# IFA – institute for occupational safety and health

## ■ Topics to consider – Human Factors

- Human factors design requirements for safe and healthy human interaction with machinery
- Requirements, explanations, examples, references for
  - Work system design concept
  - Work behavioural issues
  - Work place issues
  - Work equipment and software issues
  - Work with cyber-physical systems issues

[<https://safe-machines-at-work.org/human-factors>]



The screenshot shows a website page with a blue header and a yellow navigation bar. The main content area is white with a blue sidebar. The page title is 'HUMAN FACTOR, ERGONOMICS AND SAFE MACHINES'. The navigation bar includes links for Home, About us, Control Devices, Digital Manufacturing, Explosion Protection, Human Factors (highlighted), Stop Defeating, Membership, and Useful Links. The sidebar contains a list of topics: Design of Work Systems under Digital Transformation, Work System Concept Issues, Work Behavioural Issues, Work Equipment Issues, Task Interface Design, Interaction Interface Design, and Information Interface Design. The main content area features a section titled 'Work Equipment and Software Issues' with a sub-section 'Task interface design' containing three bullet points: analyses of system goals, functions, activities and information required; allocating functions to operator and/or to technical components of a work system (e.g. machinery); and task requirements for systems design. Below this is a sub-section 'Interaction interface design' with one bullet point: interface human operator for task interactions (e.g. dialogue) with technical system.

## IFA – institute for occupational safety and health

- **Additional topics to consider in a digital factory**
  - Tables and mobile phones for safe machine control
  - Collaborative robots
  - Smart PPE



**Interested in cooperation? For more information please contact:**



Hans-Jürgen Bischoff  
Dynamostrasse 7-11  
D – 68165 Mannheim  
[scholl@ivss.org](mailto:scholl@ivss.org)



Christian Werner  
Alte Heerstrasse 111  
D - 53757 Sankt Augustin  
[christian.werner@dguv.de](mailto:christian.werner@dguv.de)

