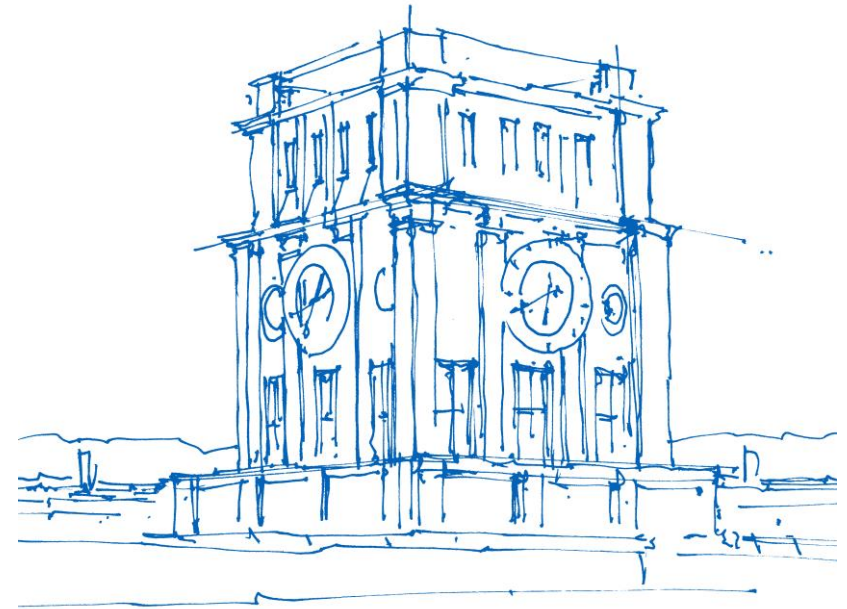


Challenges for the Future of Work

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Uhrenturm der TUM

An Initiative of the Federal Ministry
of Education and Research



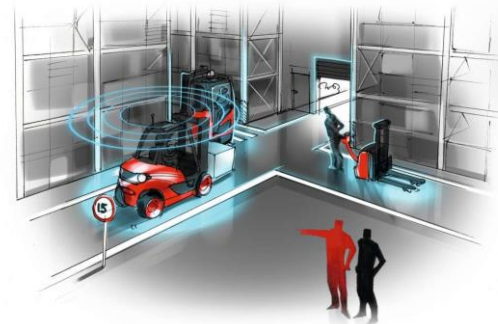
**We will teach machines how to think and laugh!
We will work in jobs that the world has not yet seen!
We will see just how close the whole world can be!**



Acatech and GfA, 2018

1. Human Factors and Ergonomics Have to Anticipate Interaction AND Evaluate Existing Systems

- Extremely **dynamic technological developments**
- Scientific technology evaluation is still missing or incomplete
 - cognitive workload
 - learnability
 - Physical workload
- **Establish systemic proactive development approach**
From tech-savvy to human-centered
- **New Reference Models and expertise for Evaluation**



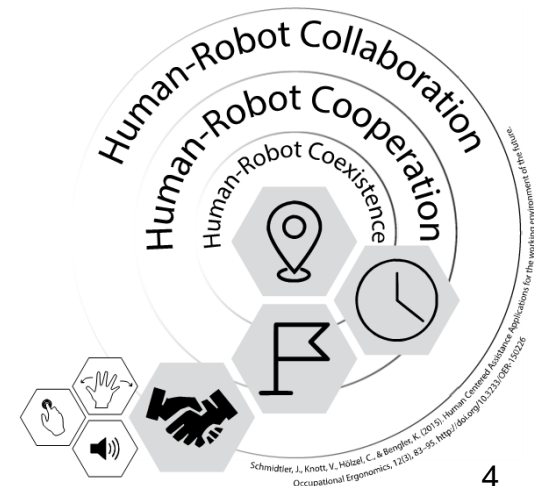
2. The Human Machine Role Model is changing

Potential of Automation und Assistance are increasing

Human-centered technology design is necessary to increase and ensure
Learning motivation and **User Acceptance**

Qualification of system designers for Human-centered technology design

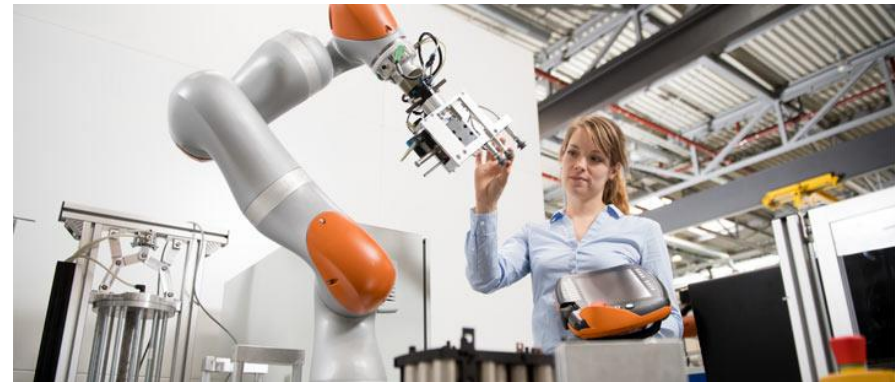
Exchanging best-practice solutions



(s auch Apt/Schubert/Wischmann 2018: Digitale Assistenzsysteme. Perspektiven und Herausforderungen für den Einsatz in Industrie und Dienstleistungen, Berlin.

3. Digitisation Requires Novel Competencies

- Planning
 - Innovation - Creativity
 - Problem solving
 - Analytical Competencies
 - Thinking in networks
 - Usage and manipulation networked systems
 - Decision competencies using probabilistic systems
-
- **Qualification of users to use, maintain and change networked systems**



4. Learning Situations are Changing

Informal Learning will increase

Formal Learning: planned, structured, clear role model



Informal Learning: unplanned, uncontrolled, problem initiated, intrinsic motivation



- Room and space
- Ability to reflect
- Trust
- Autonomy

4. Creativity and Governance

- To enable digitization **governance models** are changing ...
 - Delegation of decisions
 - Room for exchange and communication
 - Development of management competencies to...
 - Moderate non-standard behavior
 - Foster creativity and innovation

Qualification of upper management



Responsible Creativity and Innovation

Understanding the system

Understanding the user

Shaping the reference

Quellennachweise:

Folie 2: TUM

Folie 3: <https://www.pflegestudium.de/weiterbildung/praxisanleiter/>

Folie 4: LfE

Folie 5: <https://www.centigrade.de/news/de/article/industrie-4-0-auf-vier-quadratmetern-vr-ar-hannover-messe/#gallery>

Folie 6: <https://logistra.de/fachmagazin/fachartikel/logimat-sicherheit-durch-assistenzsysteme-15311.html>