



Human-Robot Collaboration in the Factories of the Future

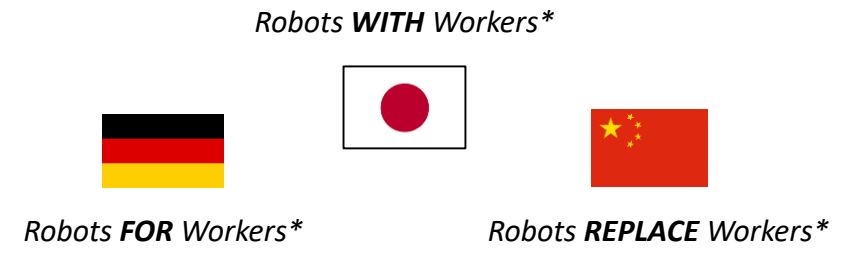
Bionic Workplace: a Festo Showcase of Human-Robot Collaboration with Artificial Intelligence



<https://www.festo.com/group/en/cms/13112.htm>

Human-Robot Interaction in Factories of the Future

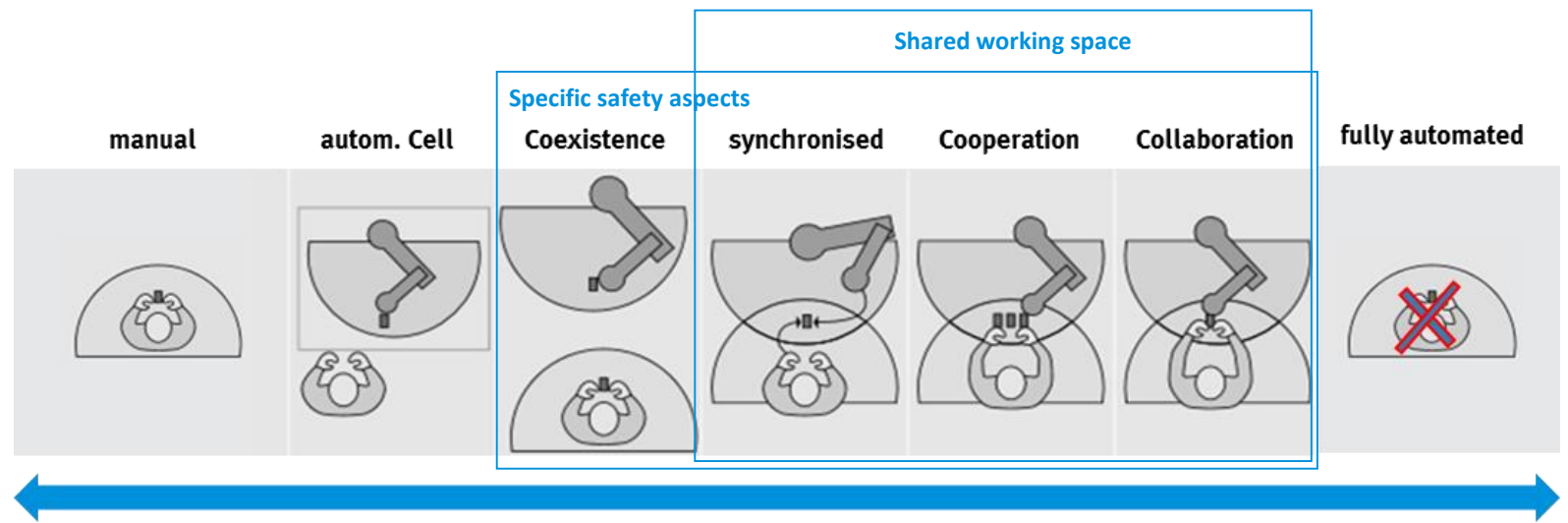
Characteristics and Sociocultural Context*



* Synthesis from an explorative study with international expert interviews on future human-robot interaction scenarios



Human Robot Interaction



Questions from a Practical Perspective

Acceptance?

Flexibility?

Productivity?

Training?

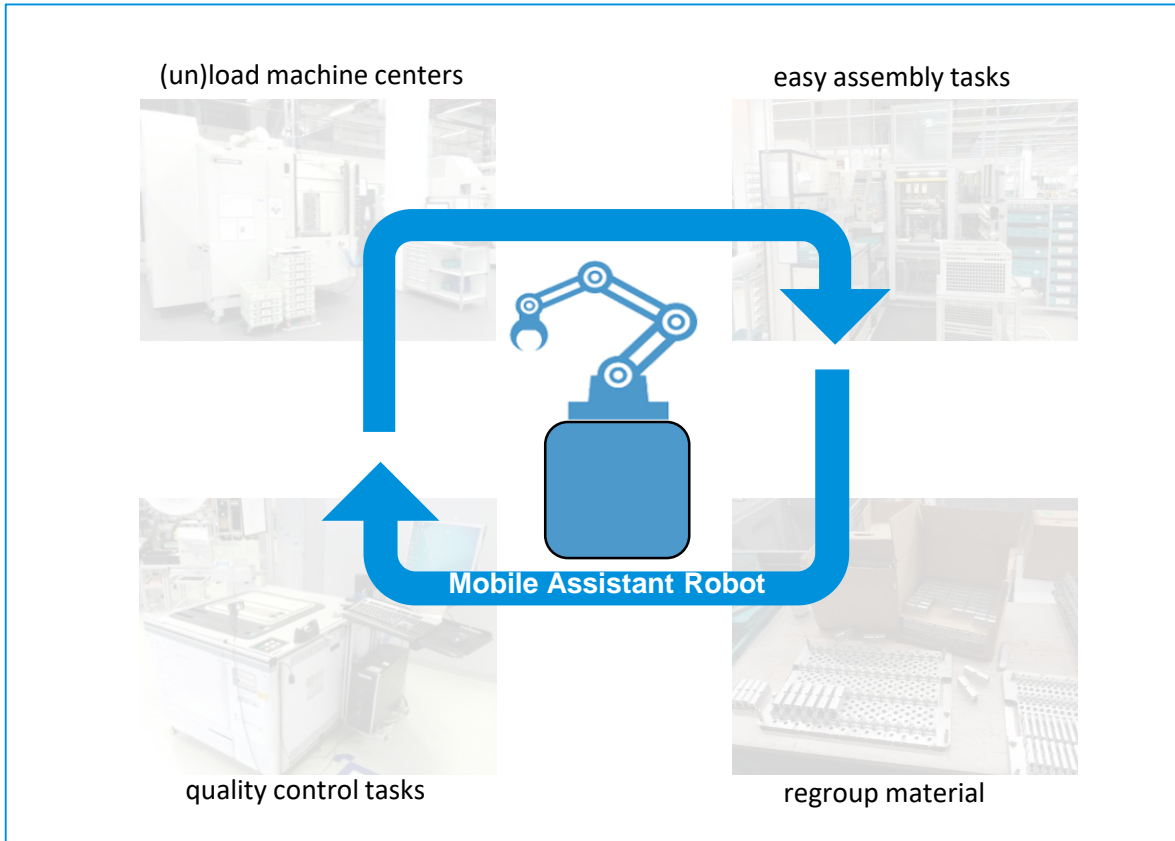
...

Interoperability?

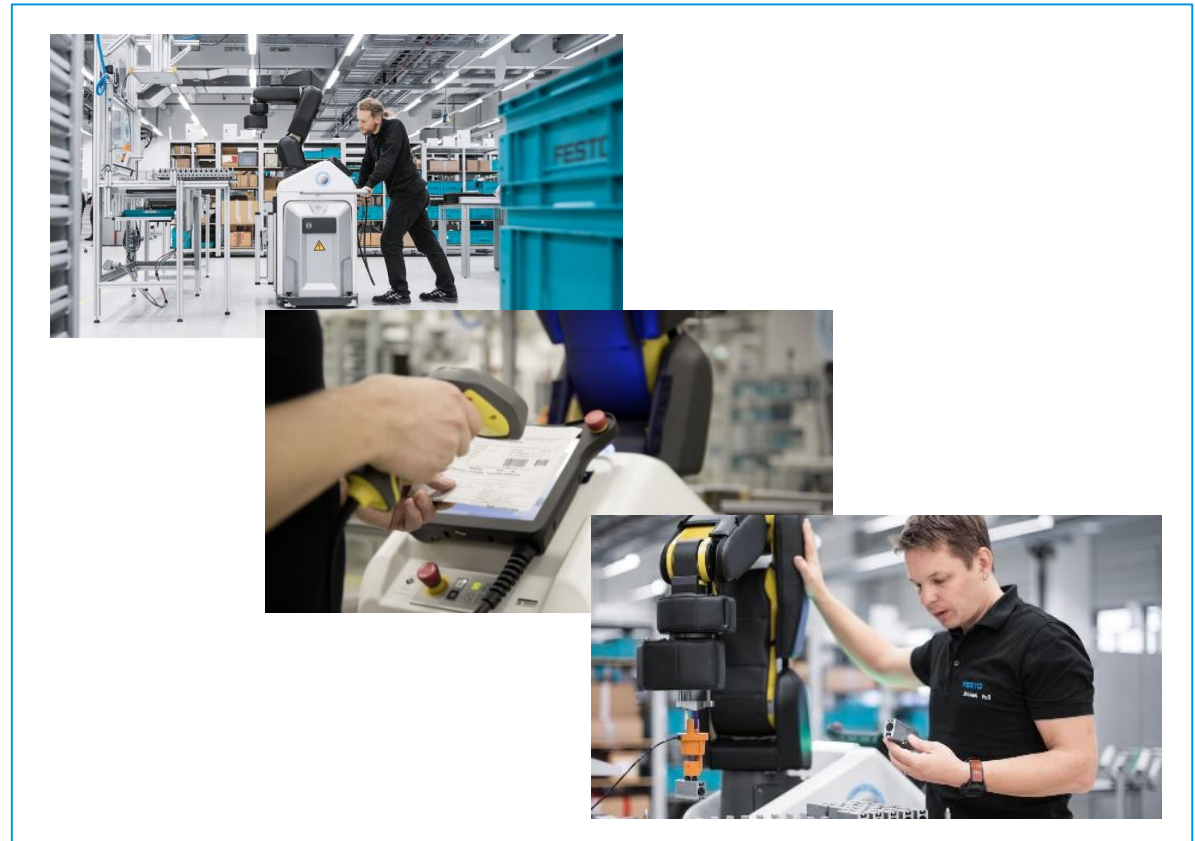
Safety?

„Robo-Sharing“ Concept with Mobile Assistant Robots for Flexible Production

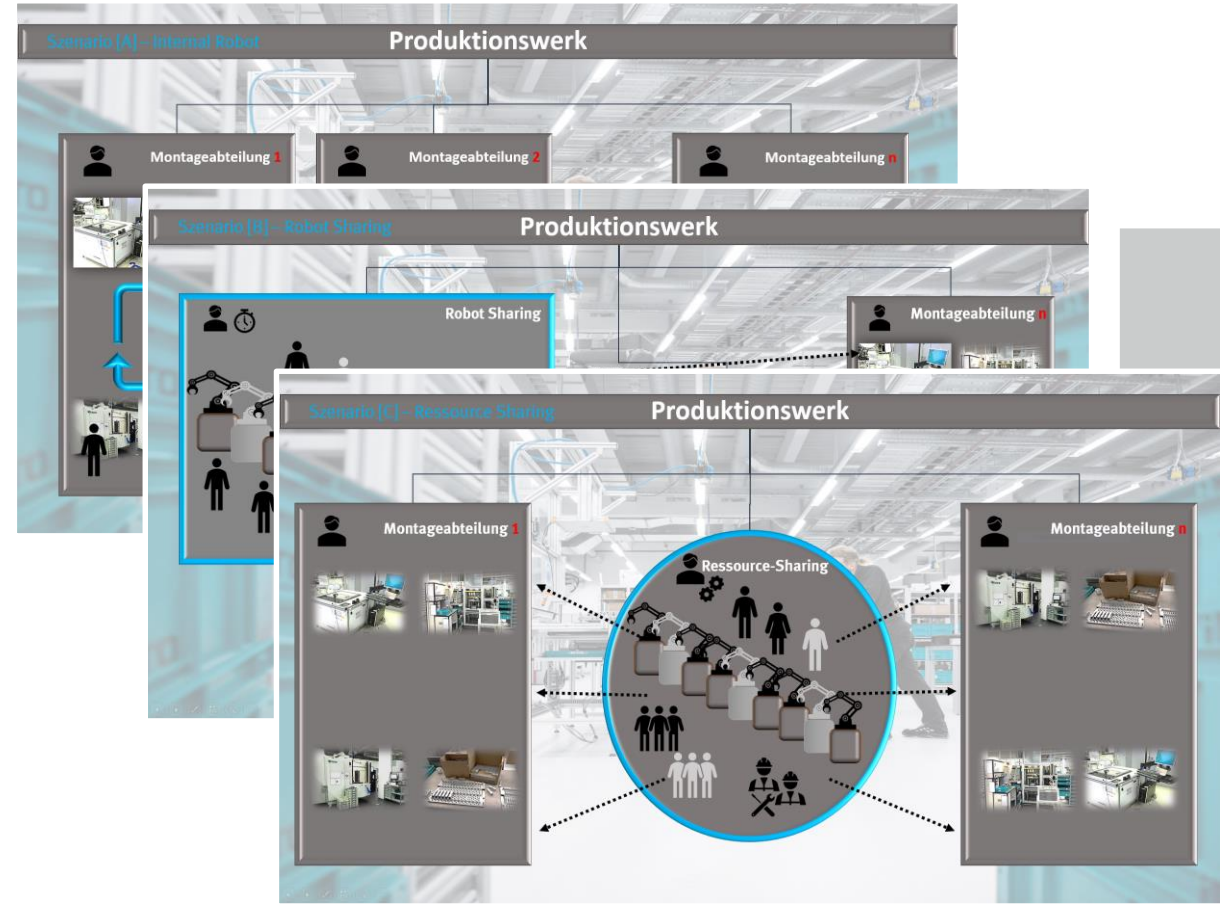
One Robot – various Working Stations & Tasks:



Workflow: „Move – Commission – Operate“



Application Scenarios for „Robo Sharing“ highlight New Jobs and Skills



- Operator of Assistant Robot
 - agility
 - self organisation
- Robot Fleet Manager
 - problem solving
- Ressource Manager
 - CPS skills
- Data Analyst
 - analytical skills
- Change Manager
 - social skills
- ...

Continuous learning on-the-job is imperative!

Key takeaways for discussion

- Workplaces in the factories of the future integrate **various technologies including collaborative robots** (cobots).
- **Implementation** of cobots is influenced by ...
 - **sociocultural context** (e.g. Robots For Workers – Robots With Workers – Robots Replace Workers), and
 - **requirements from practical perspective** (safety, productivity, interoperability, flexibility, acceptance, training, etc.).
- **„Robo-Sharing“ concept** with mobile assistant robots as an application scenario **for flexible production systems**.
- **Continuous and personalized learning on-the-job** is imperative for 21st century manufacturing!

**Thank you very much
for your attention!**



Dr. Björn Sautter
Festo AG & Co. KG, Esslingen/Germany
Corporate Research and Innovation