

Smart Manufacturing

Human-Machine-Interaction and Organisational Changes

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Megatrends as Drivers of Change

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Demographic Change

- Individualization
- Diversity
- Work-Life-Integration
- Talent shortage
- Ageing societies

Digital Transformation

- Human-Machine-Interfaces
- IT-Security and standards
- Digital competencies
- Human-Robot-Collaboration
- Virtual and Augmented Reality Systems

Globalization-Glocalization

- Internationalization
- Changing markets
- Distributed value chains
- Competing interests
- Need for local content

Some Virtual Reality (VR) Applications

- Immersive Visualisation
Support the understanding of complex datasets
- Immersive Engineering
Using Mixed Reality in Engineering
- Immersive processes
Making business processes experienceable
- Involvement by immersion
Turning affected people into involved people



Some Augmented Reality (AR) Applications

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Training related to equipment and components

E.g. by context-based descriptions and tutorials

Supporting diagnosis

E.g. linking components and elements of the switch cabinet

Remote-support on shopfloor-level

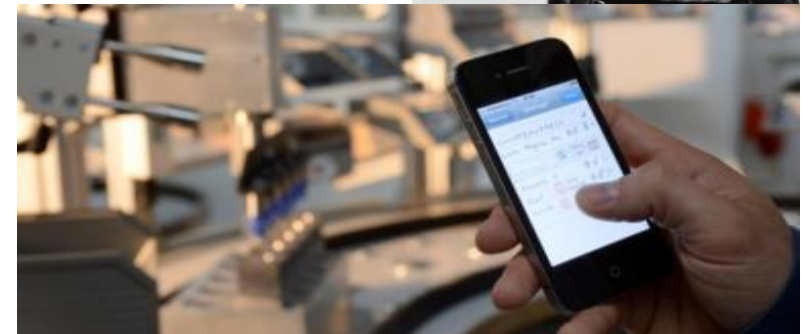
Image transfer, e.g. from tablet to smartphone

Maintenance support

E.g. automated protocols based on sensor data

Assistance on shopfloor-level

- Information provision and worker guidance
 - Decision support
 - Collaboration and communication support
 - Physical assistance
- for
- Manufacturing and assembly
 - Maintenance
 - Logistics
 - ...



Megatrends as Drivers of Change II

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Production Work 4.0

- Workplace design 4.0
- Situation-based, individualized and flexible work organisation 4.0
- Assistance 4.0 – leveraging AI, VR/AR for the support of workers and manufacturing management

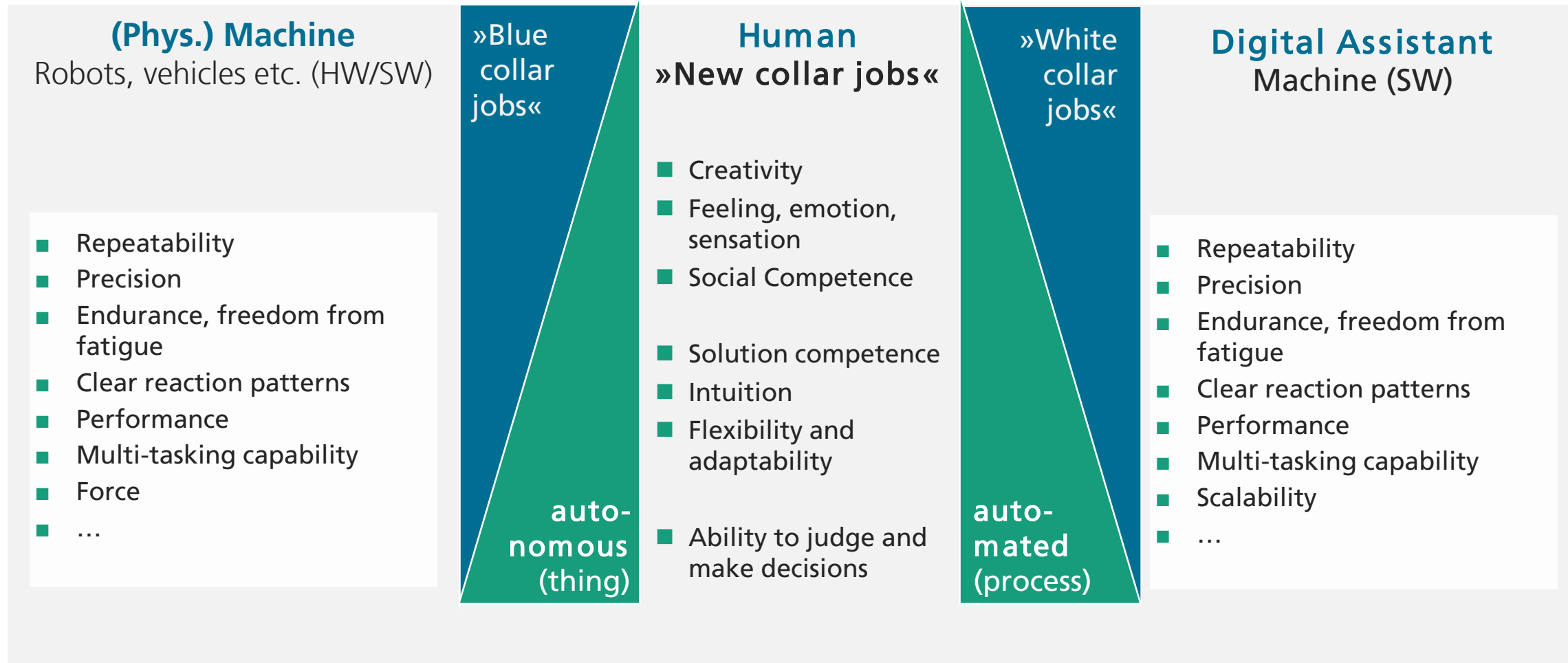
Beyond Lean – Production System 4.0

- Integration of new technologies in lean-based production systems (human, technology, organisation)
- RTD and implementation of 4.0-enabled system elements

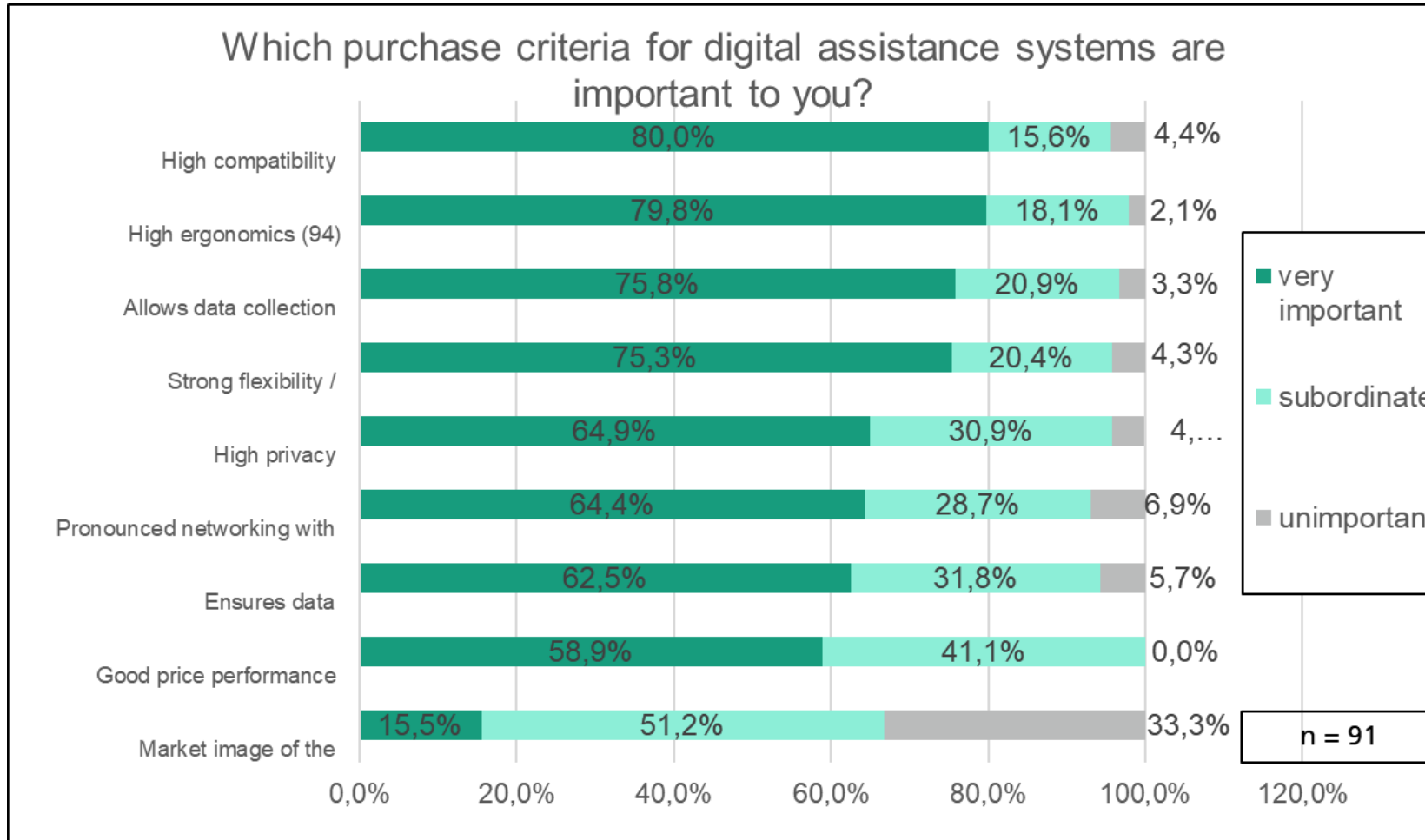


New Potentials for the design of Human-Machine-Interaction

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Implementation of Digital Assistance Systems



- Compatibility is most important
- Ergonomics is more important than data protection and data security
- Only one in three sees networking as very important
- Value for money is less important than other criteria

Summary

- Smart Manufacturing is more than the technology
- **Human**-Machine-Interaction
 - Compatibility and data collection
 - Ergonomics and usability
 - Data security and privacy
- **Organisation** of production work
 - Flexibility and agility
 - Participation
 - Leverage creativity and problem solving competence
- **Technology** is the enabler

Contact

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