# We are Well Versed in:

## Machine and Production Simulations

Collision prevention in the real operation of machine tools; integration and simulation of material removal with real control unit and virtual machine model; virtual commissioning

## Digital Twin

Process digitisation and functional visualisation; virtual twin; 3D data handling; data security

## Human-Machine-Interaction

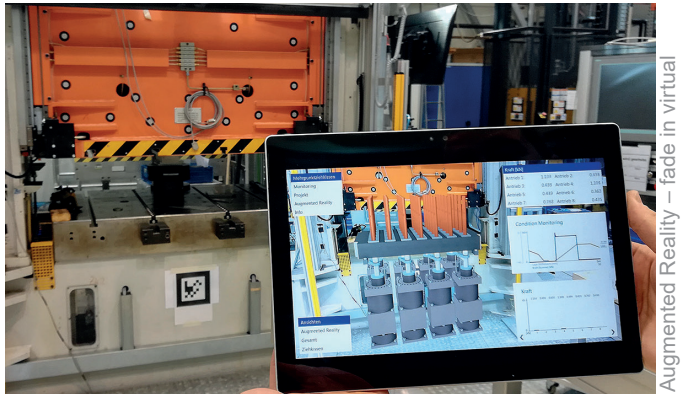
Virtual technologies (XR) to support people; Augmented Reality applications; XR for training and education

## User-Centred Conception of XR Applications

Designing virtual technologies for people; transferability of virtual processes and experiences into reality; transferability of existing methods into XR, along the entire product life cycle

## XR Technologies

XR interaction and collaboration; semantic world recognition; Augmented Reality technology



Augmented Reality – fade in virtual additional information in real time

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Division

# Process Informatics and Virtual Product Development

## ...more than just colorful images

Our interdisciplinary team works on innovative virtual techniques and their use in industrial and university applications.

Augmented Virtuality – real bicycle combined with virtual route

# What We Offer:

## Unlocking the Innovation Potential of Virtual and Augmented Reality for Companies

- Augmented reality in production:
  - User-friendly, near-real-time process visualisation on mobile devices
  - Integration of tracking, camera, 3D model, control and simulation data
  - Support of humans in service, assembly, diagnosis, marketing and training
- Visualisation and presentation
  - VR-based marketing: VR models suitable for trade fairs, incl. process sequences as well as functional and optical model enhancement
  - Web-based presentations: flexible structures for complex technical projects, products and processes; 3D models as a central element; slides, images and videos can be easily integrated
  - Rental of the mobile VR system moVE

## Holistic Use of Virtual Simulation Technologies

- Coupling of different simulations with the VR or 3D models
- Visualisation of results and interaction with the data and algorithms
- Acquisition and processing of input data

## Exploring Interaction, Feedback and Influencing Factors

- Human-machine interaction
- Control coupling
- Haptic feedback

## Improving Teaching, Education and Training

- Especially for production and medical technology
- Shortened learning times in the real workplace
- Individual, flexible learning scenarios

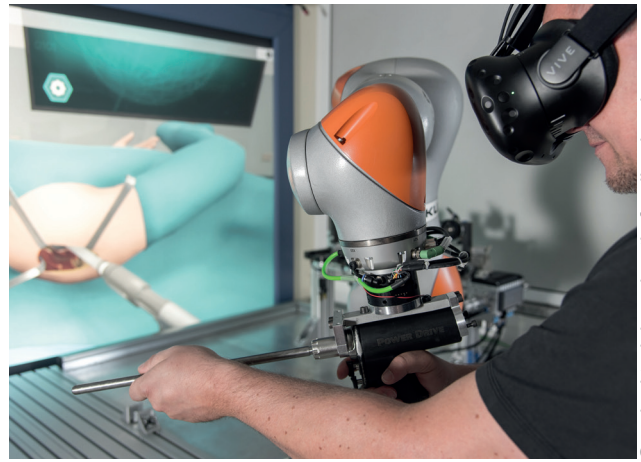
# We are Equipped with:

## Visualization Systems

- 5-sided CAVE
- VR auditorium with 180 seats
- Seminar room with Powerwall
- Mobile VR system moVE
- VR-supported workplace for human-robot collaboration, including a system for haptic feedback
- Laboratory for Automated Guided Vehicles (AGV)

## Equipment

- Virtual Reality HMDs: i.a. HTC Vive and Vive Pro, Pimax 8K, Oculus Quest
- Augmented Reality glasses: i.a. Microsoft Hololens 1 and 2, Epson Moverio BT-300
- Projective Augmented Reality System
- Motion capturing systems: i.a. XSENS MVN, Vicon
- Optical tracking systems: Microsoft Kinect, A.R.T.
- Gesture recognition systems: Leap Motion, VRfree from sensoryx



Surgical training - haptic feedback using a robotic arm