
»Authoring – a key element to efficient creation of VR/AR content«

Workshop on Industrial Augmented Reality 2005

Marco Schumann

Fraunhofer Institute for
Factory Planning and Automation IFF

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Fraunhofer Institut
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und -automatisierung

Overview Project »VIVERA«



Goals

- To create a network of VR and AR developers,
- To gather experiences from developers and users,
- To transfer VR and AR knowledge to other application domains,
- To identify the demand for further development,
- To implement prototypic demonstrator programs.

Partners

- Fraunhofer Institute for Factory Operation and Automation IFF in Magdeburg / Otto-von-Guericke University Magdeburg
- Fraunhofer Institute for Machine Tools and Forming Technology IWU in Chemnitz / Technical University Chemnitz
- Fraunhofer Institute for Production Systems and Design Technology IPK in Berlin / Technical University Berlin
- Fraunhofer Institute for Computer Graphics in Darmstadt and Rostock / Technical University Darmstadt, University Rostock



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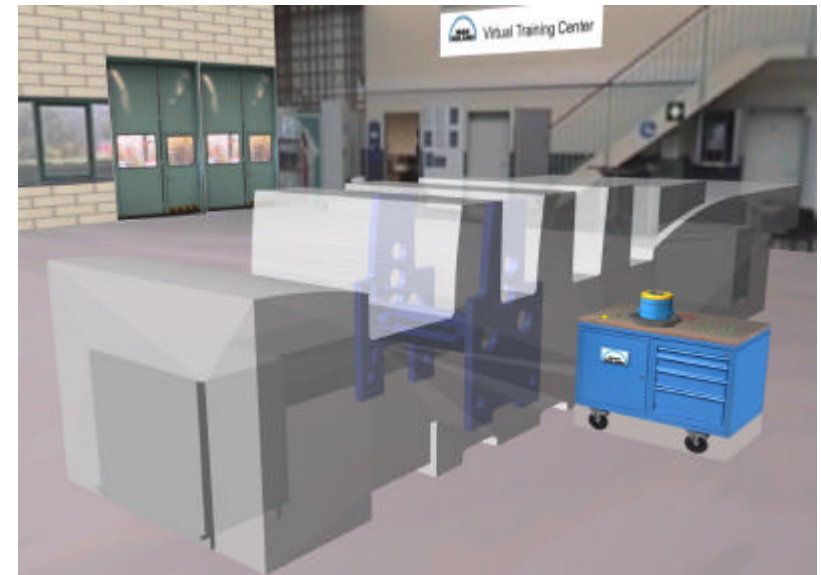
Overview

- The Virtual Development and Training Plattform (VDT)
- The system's architecture
- Adapting to the trainee's knowledge
- Demo



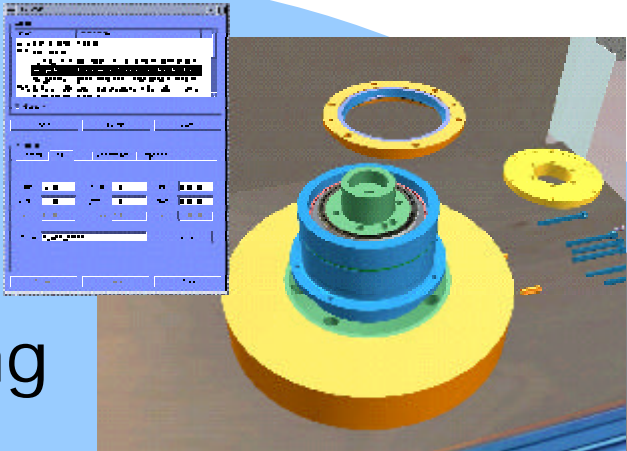
Learning Goals in the Virtual Training Environment

- Learning the shape of single components
- Learning the geometrical hierarchy of components and assemblies
- Procedures for disassembling and re-assembling
- Procedure for setting-up and shutting-down the equipment
- Training of services procedures
- Detection, diagnosis, and removal of error
- Understanding mechanisms and functions of the training object



System Architecture

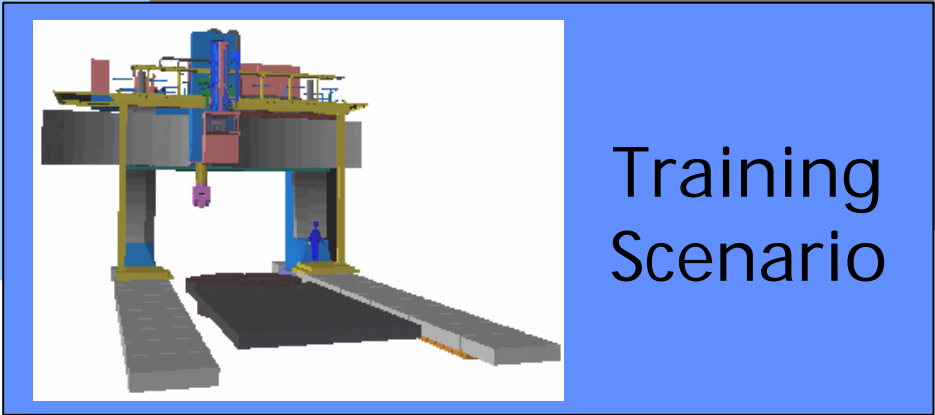
Authoring System



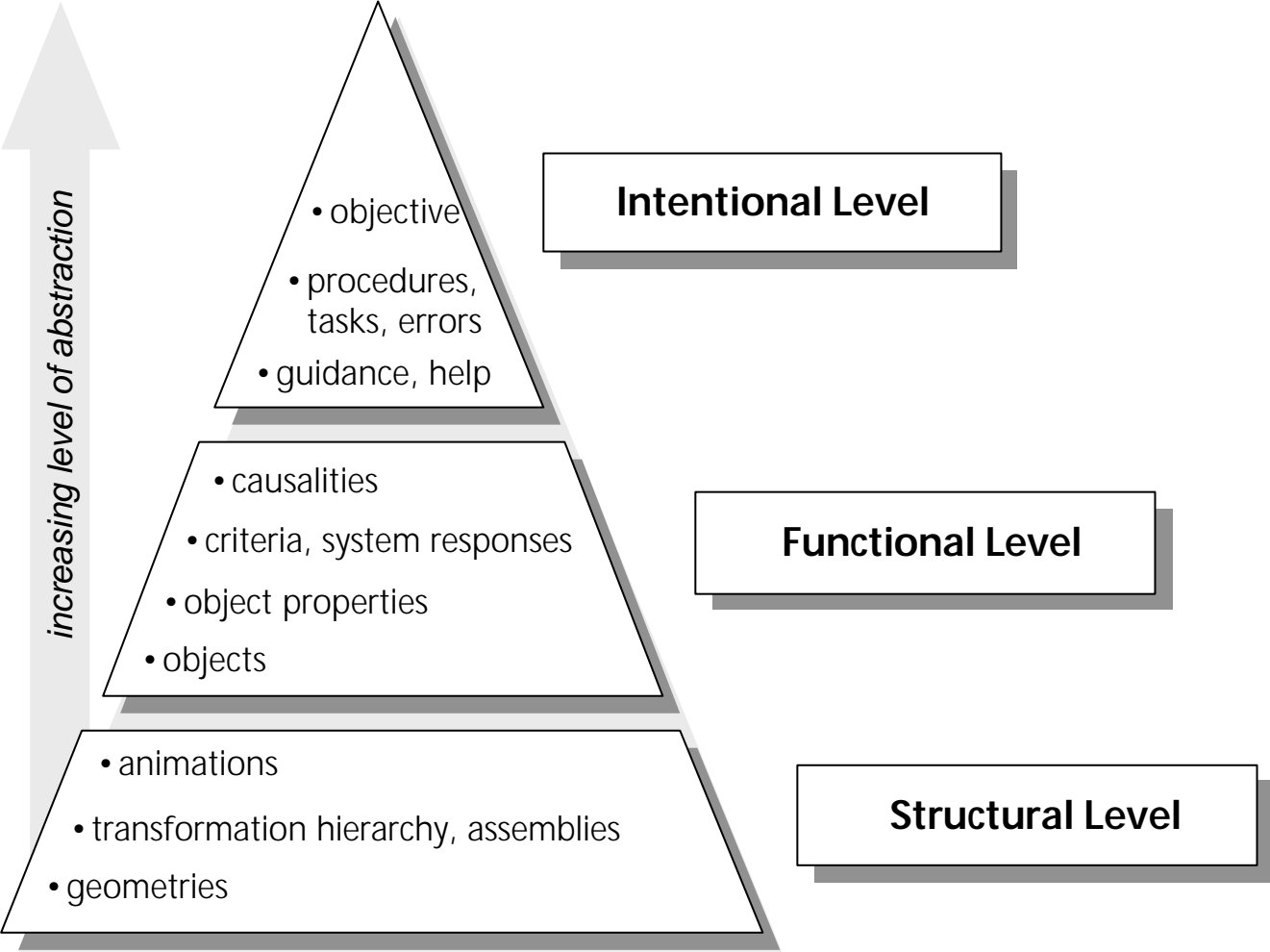
Run-time System



Training Scenario



The Scenario Layers



The Training Modes of the VDT Platform

The Training Scenario can be adapted to the user's knowledge using four training modes:

- Presentation Mode
- Guided Mode
- Free Mode
- Discovery Mode



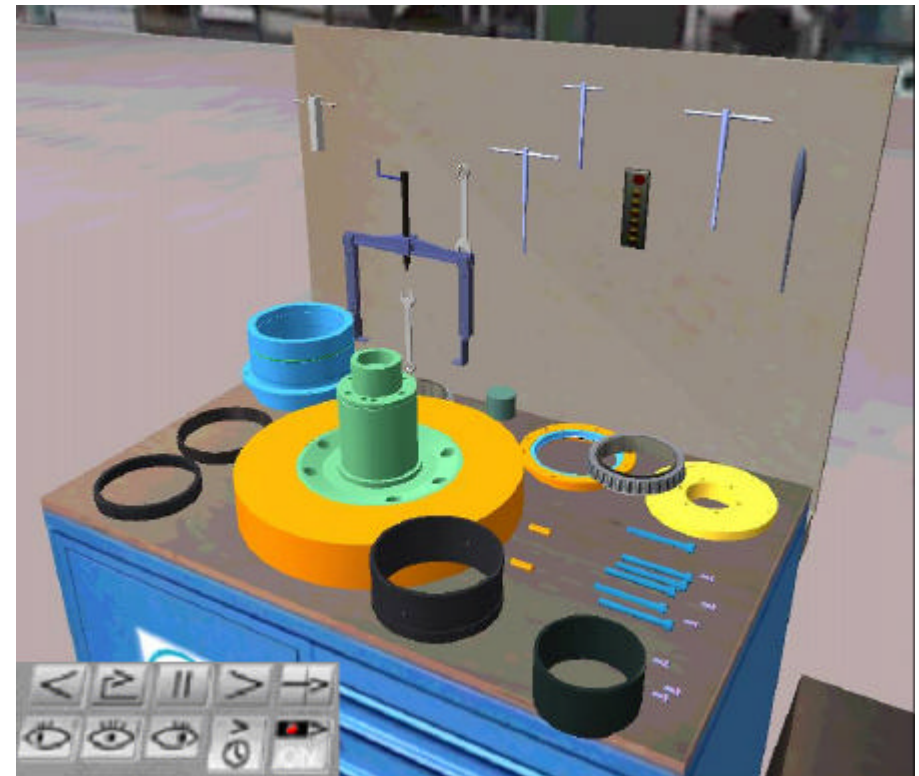
Presentation Mode

Current VR implementation

- shows how a professional would execute the task
- current task, current procedure
- no manipulation, free navigation within presentation (steps, viewpoints)

Possible AR equivalent

- Augmented animations or video sequences showing the correct step



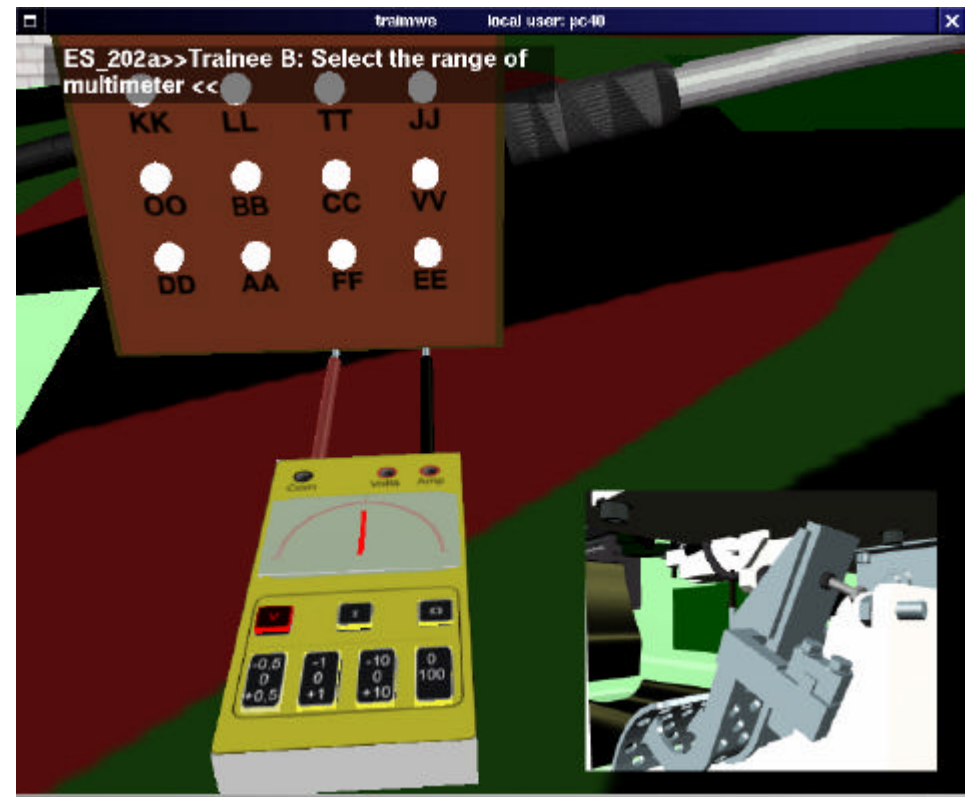
Guided Mode

Current VR implementation

- the user is guided step-by-step (with emphasis on procedure)
- current task, current procedure
- different levels of guidance and help
- limited manipulation, assessment of learner

Possible AR equivalent

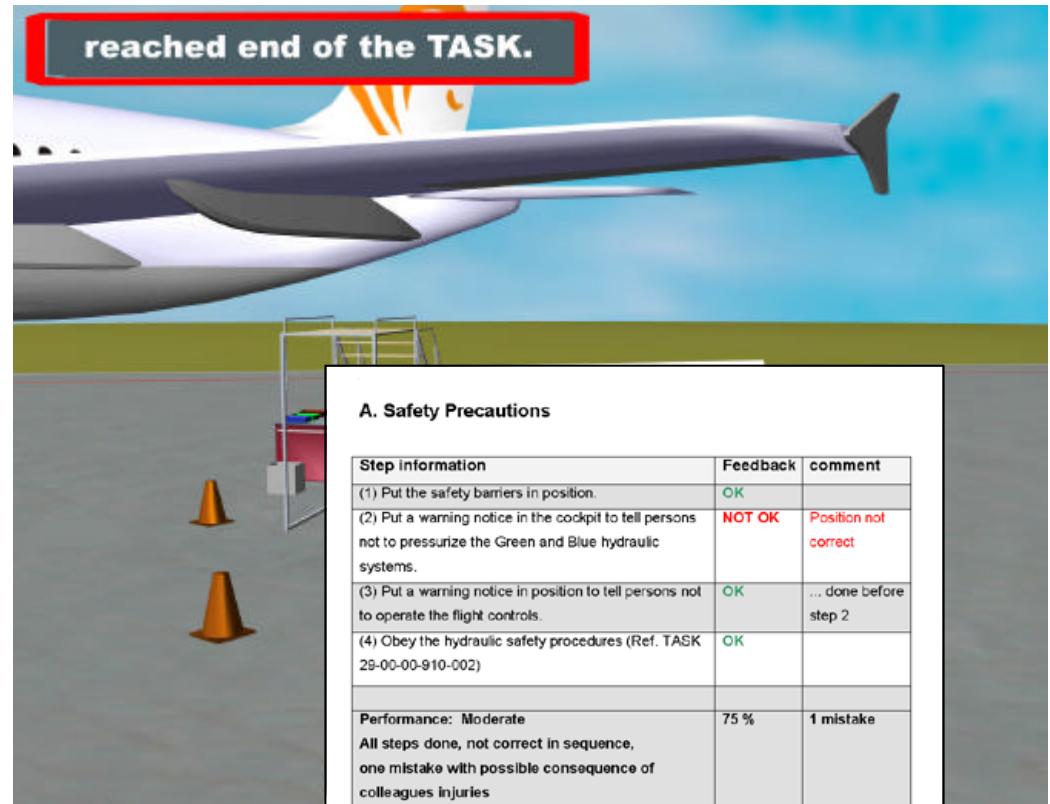
- On-the-job support following a standard sequence



Free Mode

Current VR implementation

- emphasis on independence and understanding
- current task,
no current procedure
- free manipulation, user is allowed to make mistakes
- evaluation of the user



Possible AR equivalent

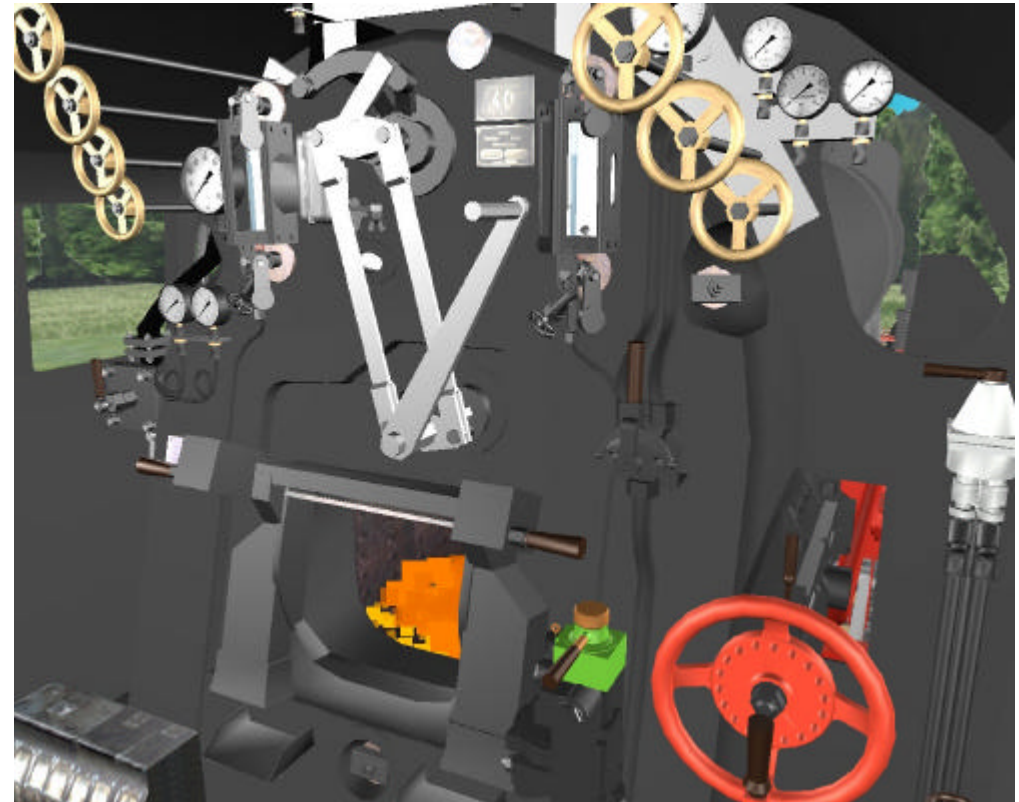
- No augmentation elements are rendered
- Correct sequence of steps is supervised



Discovery Mode

Current VR implementation

- gaining background knowledge by playing around in the environment
- no current task, no current procedure
- free manipulation, visualization of the running system



Possible AR equivalent

- Augmentations (hints, descriptions) are only rendered at the user's request
- No prescribed sequence



See the demo!

