



IMMERSE IN VIRTUAL WORLDS

**Fraunhofer Institute for Factory
Operation and Automation IFF**

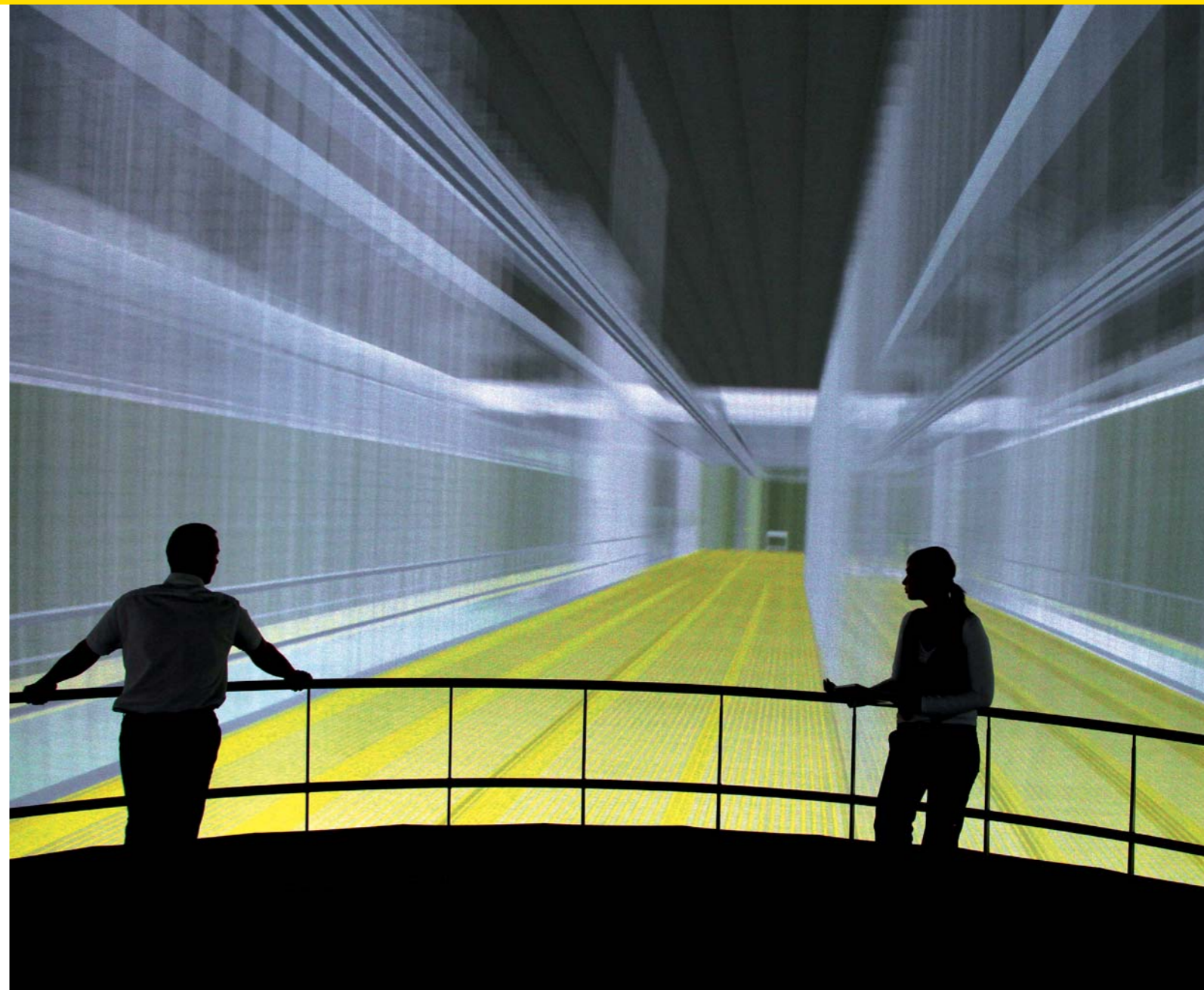
Prof. Michael Schenk

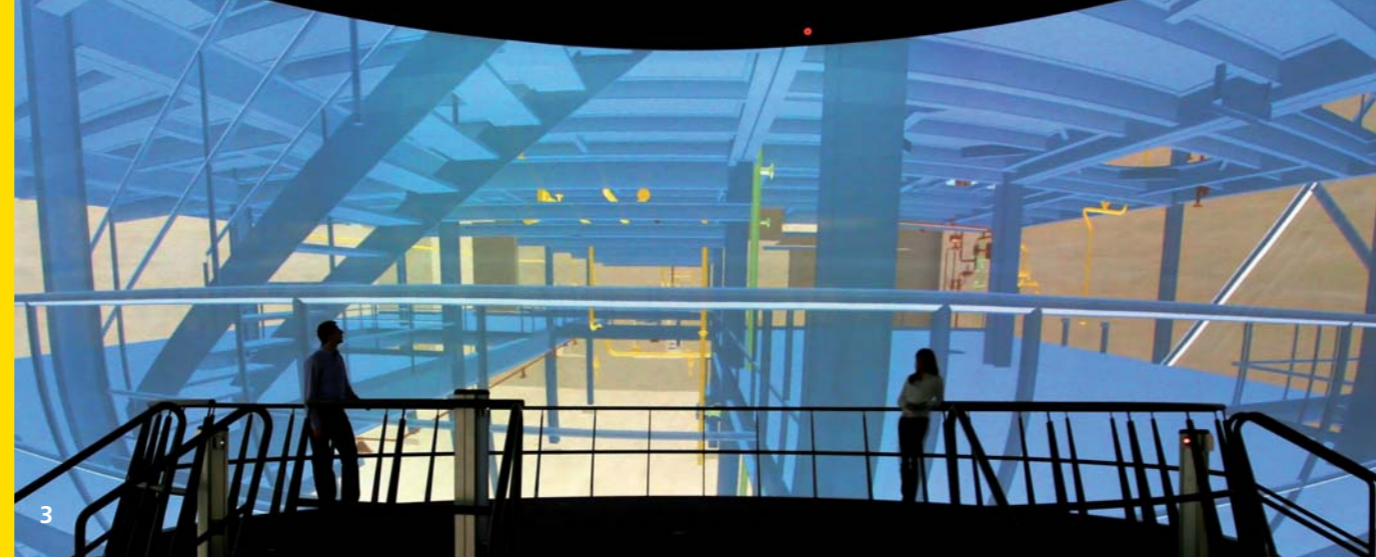
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THE ELBE DOM 360° LASER PROJECTION SYSTEM AT THE VIRTUAL DEVELOPMENT AND TRAINING CENTRE

Large 360° Projection System

The Elbe Dom is a mixed reality lab for the large-scale presentation of interactive visualizations. Dwarfing classic projection systems in its dimensions, the Elbe Dom is particularly suited for the representation of large objects such as machinery, plants, factories or entire cities on a scale of 1:1.

The Elbe Dom's shape resembles a cylinder with a diameter of 16 meters and a height of 6.5 meters, giving it a 360° projection surface of over 300m².

Six state-of-the-art laser projectors deliver images of the highest quality. The images' depth of field and color mapping far surpasses that of conventional projectors. The

surrounding projection surface gives viewers the impression of being directly in the midst of a virtual world. Various options for interaction are available, e.g. an infrared tracking system and a variety of direct input devices. They enable one or more users to work with a projected virtual environment simultaneously.

Digital Production Planning

- Design Review
- Material Simulation
- Machining Simulation
- Machinery Simulation
- Functional Tests

Data Sources

Geometry Simulation Real Time

Interoperability Scalability Filtering

Mixed Reality

Multimodality Interaction Immersion

Digital Manufacturing

- Design Review
- Assembly Simulation
- Factory Planning/ Simulation
- Ergonomic Tests
- Quality Assurance
- Control Station/ Production Management

Marketing Training Work Environment Test Environment Decision Platform Planning Validation

Large Scale Virtual Reality

This form of virtual demonstration is excellently suited to design the layout of plants and factories or plan cities and architecture. It facilitates easier planning of every operation in and on objects with large dimensions. One successfully field tested application trains pilots and technicians on jumbo jets.

Design Reviews

Accurate spatial and visual impressions, the integration of various sources of data and interoperability with planning tools are tremendously important for design reviews and no problem in the Elbe Dom.

Virtual Factory Planning

Planning a factory or a material flow is an iterative process in which a number of different groups of professions have to work together interdisciplinarily and understand one another. Virtual realities help combine heterogeneous data and unify different points of view.

Mixed Reality

Its dimensions and technical systems also enable the Elbe Dom to provide ideal conditions for complex mixed reality applications, e.g. simulations with real control ele-

ments (seat modules, operator panels), or ergonomic tests on real replicas or prototypes of workstations, systems or machinery.

Worldwide and Concurrent

The spatially distributed application of virtual reality technologies, e.g. in design reviews or training, is becoming ever more important in our globalized world. The infrastructure at the VDTC enables users to work distributedly – worldwide.

Our Facility

The Elbe Dom can be used to deliver presentations and as a discussion platform for basic and advanced training events, e.g. in product and process development or as a decision making support.

We help prepare and deliver your presentations and process your data for visualization in the Elbe Dom.

M – Immersive Engineering Workstation

Mobile projection and stereoscopic interactive presentation of virtual contents on a projection surface measuring 120 x 90 centimeters.

L – CAVE (CAVE Automatic Virtual Environment)

Multisided projection system with a length of 2.3 meters along each of its edges, stereoscopic presentation and tracking system.

XXL – Elbe Dom 360° Laser Projection System

16 meters in diameter, 6.5 meters high, tracking system with 12 cameras.

View your own corporate environment three-dimensionally – no matter on what scale.

- 1 Factory planners can already experience new factory buildings and the operations in them before they have even been built. The experts at the Virtual Development and Training Centre VDTC simulate them from the start.
 - 2 Immerse in a virtual world. The Motion Base Lab makes this possible.
 - 3 Virtual reality for factory construction and plant engineering.
 - 4 Virtual interactive training module for the qualification of chemical experts.
 - 5 Virtual reality in the product life cycle.
- Photos: D. Mahler