

# Multimodal Cockpit Simulator (MMCS)

Virtual reality helicopter simulator with 3D-audio and active control loading components

## Brief description

MMCS is a simulation platform with active helicopter controls. The environment is not displayed using conventional screens or projectors – the pilot wears virtual reality glasses instead. Further, the spatial sound environment is calculated by virtual-audio software. Fast and precise head-tracking allows the pilot to look around freely while seeing the appropriate stereo image and hearing the corresponding spatial audio.

## Aims

The multimodal cockpit simulator expands DLR's existing cockpit simulator portfolio (motion simulator, fixed-base simulator, etc.). Since most of the cockpit environment is virtual, the set-up can be modified easily and more quickly than with conventional simulators. This flexibility makes it ideal for conducting research into novel multimodal cockpit concepts.

## Applications

- Simulation environment for evaluating cockpit display concepts
- Virtual-audio evaluation environment
- Evaluation of human factors
- Procedure training
- Development of future multimodal cockpit concepts

## Outlook

- Low-cost flight simulator
- Cockpit of the future
- Remote ground control station
- Rapid prototyping environment



## Parties involved

DLR Institute of Flight Guidance  
DLR Institute of Flight Systems  
Brunner Elektronik AG  
New Audio Technology GmbH

## Facts and figures

- **Virtual cockpit:** instruments and synthetic 360° view from different perspectives (DLR)
- **Audio:** virtual-audio system SPAACE (DLR and New Audio Technology GmbH)
- **Operation:** active helicopter control loading system (BRUNNER Elektronik AG)
- **Flight simulation:** highly stabilised helicopter command model (DLR)
- **Display system:** Oculus Rift CV1 VR Glasses

