

Dedicated to innovation in aerospace

## Virtual Community Noise Simulator (VCNS)



### Experience aircraft flyover noise in a virtual environment

The NLR Virtual Community Noise Simulator (VCNS) is an innovation to support airport communities and other stakeholders who want to experience aircraft noise in their own environment by using the latest virtual reality technologies with 360 degrees video and 3D audio experience. New aircraft types and new procedures can be examined and presented at any location before they are implemented or planned.



# Experience how different aircraft and procedures can make a difference

The VCNS supports the discussion and acceptance of new decisions, rules and regulations in an unprecendented manner. The simulator can also be used for land planning activities, such as for wind parks, rail and road traffic, and industry noise.

#### WHAT YOU NEED

- An objective way to demonstrate impact of noise reduction measures?
- A means to demonstrate the (reduction of) noise from aircraft, wind turbines, road traffic, trains, or industry?
- A way to visualise the community in a realistic virtual reality environment?
- To examine the impact of noise reduction measures, both from the source, as by shielding or other measures?

#### WHAT WE DELIVER

- A fully-immersive 360 degrees virtual reality simulator including 3D positional audio
- A way to demonstrate on location your noise impact solutions for groups between 1 to 600 people
- Expertise to translate and validate noise impact to the location and environment from where it is observed
- The presented sound levels are validated and calibrated with a dummy head

#### STATE-OF-THE-ART TECHNOLOGY

NLR created, together with NASA, advanced computer models and simulation equipment in order to reproduce convincing flyover noise. The flyover noise is coupled in real-time to a virtual environment in which the test person is submersed. As a result, the experience of the flyover noise as perceived is simulated realistically under varying atmospheric conditions.

#### **RANGE OF APPLICATIONS**

For any airport on the globe, the audible and visual effects of noise mitigation measures on aircraft or procedures can be presented in a virtual environment. As such it is possible to quickly investigate the possible benefits of such measures in an appealing manner. By including more than one virtual environment, the same flyover can be assessed at multiple locations on the ground.

Large scale research in noise annoyance is achieved when subjecting multiple persons to the same scenario. The simulator can also be used for land planning activities, such as for wind parks, rail and road traffic, and industry noise.

#### THE VCNS IS:

- Suited to be used as a pre-evaluation tool of new aircraft and flying procedures
- Simulation of different noise sources like wind parks, road and rail traffic, and industry noise
- Appropriate for research, policy related questions and objective advice
- Scalable and mobile solutions for demonstrations from small groups to large audiences

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