EXCELLERAT

VISUALISATION

Analysing large amounts of data generated by Exascale simulations is a challenge for scientific visualisation.

Vistle is an **extensible software environment** that integrates simulations on supercomputers, post-processing, and parallel interactive visualisation in immersive virtual environments.

Furthermore, interfaces to the advanced data analytic tools, also developed within EXCELLERAT, have been designed such that they **can be applied within the visualisation framework**.

#EXCELLERAT

VISUALISATION

SERVICES

- Vistle is available **open source**
- Online documentation
- **Courses and workshops** regarding scientific visualisation and the use of Vistle

CHALLENGES

For large scale simulation data, I/O can become a major bottleneck. **Debugging and analysing more and more complex simulations also get more difficult**. Foremost the huge amount of data generated by these simulations must be handled in an efficient way, but also the rising complexity that comes from bigger domain sizes has to be considered.

SOLUTION

Vistle has been extended by in situ interfaces to two popular visualisation tools, namely VisIt's LibSim library and the SENSEI in situ framework. Therefore, simulations instrumented with one of these interfaces additionally work with Vistle.

UNIQUE VALUE

Vistle combines in situ post processing with virtual reality capabilities. **The cluster composition can be very flexible**, ranging from direct inline visualisation with (hybrid) remote rendering to in-transit processing with intermediate clusters.

BENEFIT FOR HPC PROVIDERS AND HPC TECHNOLOGY PROVIDERS

- **Reduced data I/O**
- Early error detection **prevents costly simulation runs**
- **Deeper insights in the simulation data** via Virtual Reality

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