# Performing Earthquake Simulations at Petascale With SeisSol - an I/O View

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## Abstract

While computational resources have grown at an exponential rate in the past years, the bandwidth to persistent memory could not keep up with this pace. This has lead to a large gap between compute and I/O kernels in many large scale applications. In this talk we will present I/O optimizations for the petascale application SeisSol. SeisSol uses a high order Discontinuous Galerkin implementation on unstructured tetrahedral meshes to simulate seismic wave propagation tightly coupled to dynamic rupture events with detailed geometry. Our I/O optimization target the complete workflow of SeisSol to allow realistic simulations of relevant scenarios at petascale performance with more than one billion elements and 500 billion degrees of freedom. The optimizations include a parallel format for large unstructured meshes, an advanced checkpoint-restart mechanisms and customizable aggregation of data from multiple ranks and alignment to file system blocks for the 3D wave field output.

## References

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