

# ESD ROUNDTABLE AT EUROPEAN HPC SUMMIT WEEK 2017

## ExaHyPE – An Exascale Hyperbolic PDE Engine

- High-order adaptive discontinuous Galerkin method to solve hyperbolic systems of conservation laws; e.g.: relativistic simulations of collapsing neutron star systems, seismic wave propagation and earthquakes
- Compute-bound performance on CPU-based (homogeneous) supercomputers; engine will provide option for fault-tolerant numerics (detect erroneous computations during simulation)
- Programming model: MPI+TBB or MPI+OpenMP (OpenMP work in progress)
- Attaching to I/O strategies/solution and/or fault-tolerant task-based programming models could be tackled during FETHPC project period
- Simulation engine available as open source
- **EsD project could evaluate and analyse ExaHyPE grand challenge simulations on exascale prototype**