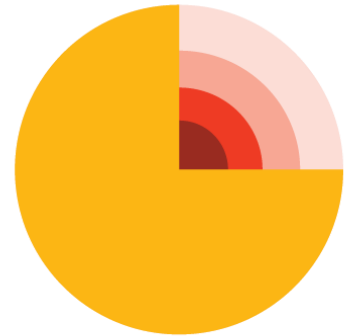


T2.1 and T2.2 Activities and highlights

Flagship code Elmer/Ice extended team

12/19/2023



ChEESE-2P





- ❑ **Code audit status:** *completed – report uploaded*
- ❑ Machine(s) used for the code audit: L U M I - C
- ❑ POP tools used: Extrae and MPIP
- ❑ Code version: MPI + OpenMP SIMD (OMP_NUM_THREADS=1)
- ❑ Reason: chose “blueprint” example that is optimized for CPUs in order to have second audit on GPU node
- ❑ Highlights:
 - ❖ Systematic small load imbalance imposed by geometry (consistent over all problem sizes) due to domain decomposition, else no real grounds for optimization
 - ❖ Only possible improvement (check necessity of MPI_BARRIER)



- ❑ T2.2 **workplan status**: draft version uploaded
- ❖ Using **solver from audit** and augmenting matrix assembly part with **OpenMP-offload** directives. First (single threaded) OMP offload version of solver is already operative on LUMI-G!
- ❖ Porting of Elmer with **Cray compiler** (no support for GPU offloading in GNU on LUMI-G!) succeeded. We have a working version supporting OpenMP GPU offload. Need to test performance on CPU against usually used GNU
- ❖ Soon **implementation of ROCalution API into Elmer** using the Cray-compiler stack environment

