

## **Multi-block structured code (elsA) and an unstructured code (AVBP) hands-on**

*Friday, 27 September 2013 13:30 (5 hours)*

The aim will be to test some of the requirements presented in the course (such as mesh-partitioning and load balancing) to achieve high-scalability on massively parallel computers (maybe also on GPUs).

Two examples are used to illustrate these concepts: a multi-block structured code (elsA) and an unstructured code (AVBP). Parallel computing strategies used with both flow solvers are detailed and compared. This comparison indicates that mesh-partitioning and load balancing are more straightforward with unstructured grids than with multi-block structured meshes. However, the mesh-partitioning stage can be challenging for unstructured grids, mainly due to memory limitations of the newly developed massively parallel architectures. Finally, detailed investigations show that the impact of mesh-partitioning on the numerical CFD solutions, due to rounding errors and block splitting, may be of importance and should be accurately addressed before qualifying massively parallel CFD tools for a routine industrial use.

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