

## **EXCELLERAT: The European Centre of Excellence for Engineering Applications**

### **Description**

Engineering applications will be among the first exploiting exascale, not only in academia but also industry. In fact, the industrial engineering field is *the* industrial field with the highest exascale potential, thus EXCELLERAT brings together the necessary European expertise to establish a Centre of Excellence in Engineering with a broad service portfolio, paving the way for the evolution towards EXASCALE. All within the frame of the European HPC Strategy realization just pushed forward with the activities on the EuroHPC Joint Undertaking.

To fulfil its mission, EXCELLERAT will base on six carefully chosen reference applications (Nek5000, Alya, AVBP, Fluidity, FEniCS, Flucs), which were analysed on their potential to support the aim to achieve EXASCALE performance in HPC for Engineering and thus to become candidates to be executed on the Exascale Demonstrators, Pre-Exascale Systems and Exascale Machines. All the facets of such a centre are addressed by EXCELLERAT, from "non-pure-technical" services such as access to knowledge or networking up to technical services as e.g. Co-Design, Scalability enhancement or Code porting to new (Exa)Hardware. As the consortium contains key players in HPC, HPDA or Knowledge Transfer and having for all reference applications the developers on board, impact (e.g. awareness creation but also feedback into the code development itself) is guaranteed. The scientific excellence of the EXCELLERAT consortium enables evolution, optimization, scaling and porting of applications towards disruptive technologies and increases Europe's competitiveness in engineering. Within the frame of the project, EXCELLERAT will prove the applicability of the results to other HPC engineering applications than the six chosen. Thus, EXCELLERAT will extend the recipients of its developments beyond the consortium and use the tool of interest groups to integrate external stakeholders of its value network into its evolution.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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