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Aeromines: a new cloud computing platform

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Aeromines (http://www.aeromines.com) is a scientific computing cloud platform for computational fluid dynamics and fluid structure interactions problems developed by the CFL (Computing & Fluids) Research group at CEMEF, a laboratory of Mines Paristech, and marketed by Transvalor to industrial clients in several domain: Aerospace, Defense, Automotive, Construction, Energy, etc. We discuss here all the key innovative features that set it apart.

Indeed, the use of immersed volume methods to deal with complex geometries combined with advanced finite element solvers to handle unsteady turbulent flow simplifies setting fluid-structure interaction simulations on the cloud. Moreover, we propose a responsive web interface that adapts to your device screen whether it is a desktop computer, a laptop, a tablet or even a smartphone. Finally, the capability of using parallel anisotropic mesh adaptation, real time visualization and simulation parameters update allows the creation of custom-made applications for SME and industry.

Furthermore, to answer the needs of a growing number of connections, a new collaboration with IBM Cloud Computing Platform is put in place. This latter enables us to offer a secure solution and specific needs of High Performance Computing. In this talk, we will discuss also the advantageous of this solution and highlight what such collaboration can provide, in particular:

- A cloud infrastructure tailored for HPC, with, for example, Infiniband,
- A complete PaaS solution to easily host the Aeromines software stack with enterprise grade scheduling,
- Security, with isolated resources to either a shared cluster or dedicated clusters for clients with highly confidential data,
- Flexibility with the ability to grow or shrink resources depending on client demands.