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## Distributed Fluid-Structure Interaction Scenarios on Production Grids

Grids are now a commonplace for advanced computing applications. In our approach, the grid-enablement of simulation scenarios is carried out with the GridSFEA framework. The end-user can perform operations such as submitting computations to the grid, searching for a specific scenario on the grid, or previewing the results of a simulation without having to download large data sets to his computer. Moreover, large scenarios can get migrated by GridSFEA from one grid to another. These functionalities are designed as plugins and are integrable in diverse grid applications.

We simulated distributely partitionned fluid-structure interaction scenarios, dealing with the investigation of very large floating structures. The communication between the flow and structure solvers is handled by the coupling interface PreCICE. The two solvers run at different physical locations and exchange interface data through GridSFEA. In addition to that, GridSFEA handles entire FSI scenarios (formulation of the job, submission, retrieval of results) on production grid deployments running the Globus Toolkit 5 middleware.

The chosen example demonstrates two essential outcomes of our approach. In the first place, end-users of applications developed on top of our plugins need not to have technical knowledge about the grid. Secondly, the application developers just have to incorporate our plugins in their codes to have grid-capable applications. This work was partly funded by the Romanian National Council of Scientific Research, contract nr. RU-RP 10/2009.

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