# HPC Development Internship at Altair

**Company: Altair Engineering France**
**Contract: Internship, master 2 level, with possibility to continue with a PhD thesis.**
**Location: Sophia Antipolis, France**
**Starting date: Q1/Q2 2016**
**Duration: 4/6 months**

Altair empowers client innovation and decision-making through technology that optimizes the analysis, management and visualization of business and engineering information. Privately held with more than 2,000 employees, Altair has offices throughout North America, South America, Europe and Asia/Pacific. With a 30-year track record for high-end software and consulting services for engineering, computing and enterprise analytics, Altair consistently delivers a competitive advantage to customers in a broad range of industries. Altair has more than 5,000 corporate clients representing the automotive, aerospace, government and defense, and consumer products verticals. Altair also has a growing client presence in the electronics, architecture engineering and construction, and energy markets.

Altair HyperWorks is an enterprise simulation solution for rapid design exploration and decision-making. As one of the most comprehensive, open-architecture CAE solutions in the industry, HyperWorks includes best-in-class modeling, analysis, visualization and data management solutions for linear, nonlinear, structural optimization, fluid-structure interaction, and multi-body dynamics applications. Altair RADIOSS is a leading structural analysis solver for highly non-linear problems under dynamic loadings. It is highly differentiated for scalability, quality and robustness, and consists of features for multiphysics simulation and advanced materials such as composites. RADIOSS is used across all industry worldwide to improve the crashworthiness, safety, and manufacturability of structural designs.

## Your mission

Parallel performance of the RADIOSS solver is a critical priority. We are seeking for an enthusiastic student for an internship inside the parallel development team. His main objective will be to evaluate new domain decomposition approaches to improve efficiency of RADIOSS solver for different physics: crash & safety, Multiphysics (SPH), stamping simulations, …

After a first step to learn current algorithms in use, you'll evaluate possible improvement based on some new technologies for domain decomposition (bibliographical study and benchmarking on massively parallel supercomputers).

The conclusion of this project will be taken into account for future implementation work that could be continued during an industrial PhD thesis within Altair.

During this internship, you will have the opportunity to increase your knowledge in software parallelization working closely with HPC experts and also interact with the other RADIOSS developers, specialists in mechanical engineering simulations.

## Knowledge and skills

☐ Parallel programing using MPI
☐ Programing skills in Fortran 90 or C/C++
☐ Knowledge of finite element analysis or numerical solutions (linear equation solver, eigenvalue solver)
☐ English

## Contact

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