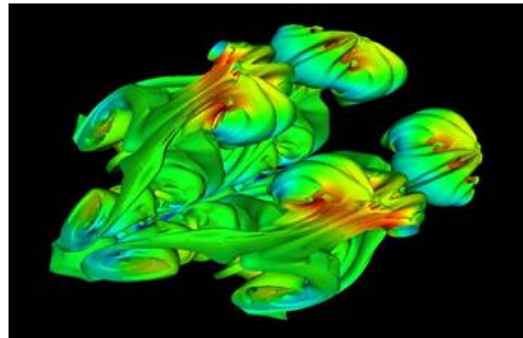


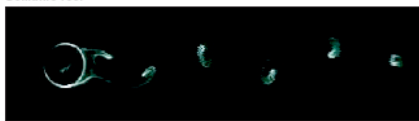
Software for HPC

Developing software suitable for HPC constitutes a formidable challenge. It requires bringing together the highest level of skills from a range of disciplines such as physics, applied mathematics, numerical analysis, computer science and software engineering.

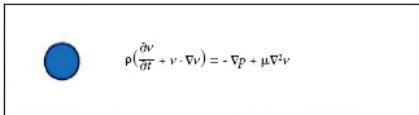


3D Simulation of instabilities

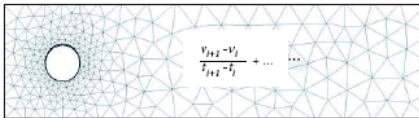
Domaine réel



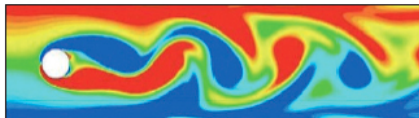
Modélisation



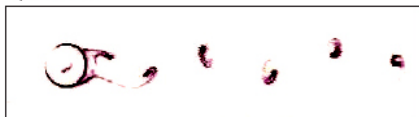
Résolution



Simulation



Expérimentation

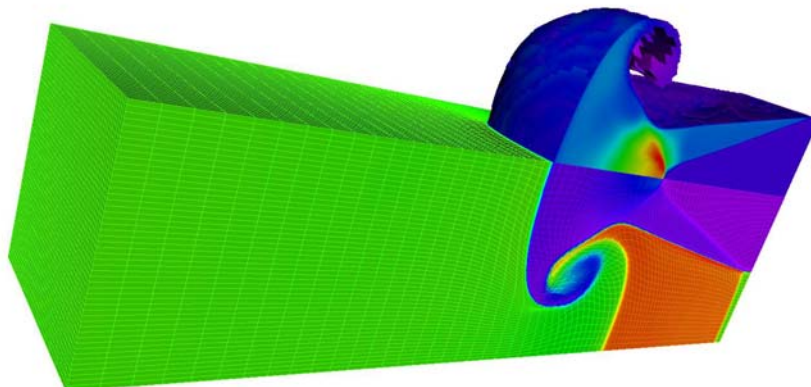


The application of these skills is illustrated by:

- development of physical models and analysis of the associated mathematical equations;
- design and development of numerical algorithms to solve the mathematical equations
- design and development of the software architectures
- development and validation of modules for the computation software
- development and validation of the software applications environment

This approach is cemented together by the computation software and the environment which comprises a calculation sequence for numerical simulation. Their use is strikingly illustrated by the great achievements made possible by the performance of these computers. Simulation software, once it has been validated by a set of experiments, becomes a great tool. It is an analytical tool for the researcher which allows him to identify the most important processes in very complex systems, and it provides an optimisation tool for engineers.

Study of fluid flow around a cylinder



Shock tube with 3 materials