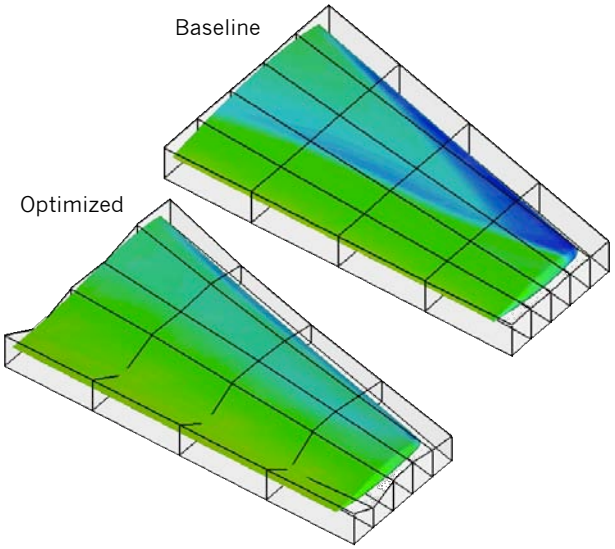


About SU^2

SU^2 is an open-source software suite specialized for high-fidelity Partial Differential Equation (PDE) analysis and design of PDE-constrained systems on unstructured grids.

The suite includes C++ analysis modules, linked via python scripts, that:

- Solve the PDE system
- Decompose the domain for parallel computations
- Determine sensitivities of an objective function (e.g. lift, drag)
- Deform the model and grid to perform shape optimization
- Perform adaptive grid refinement

Mac OS X, Linux and Windows binary executables can be downloaded from the SU^2 website:
http://su2.stanford.edu

http://su2.stanford.edu

SU^2 is a cutting-edge, flexible, open-source tool that can be used for:

- High-fidelity analysis
- Adjoint-based design
- Multi-physics simulations
- Adaptive, goal-oriented mesh refinement

Documentation and a full description of current and upcoming features are available on the SU^2 website:

http://su2.stanford.edu

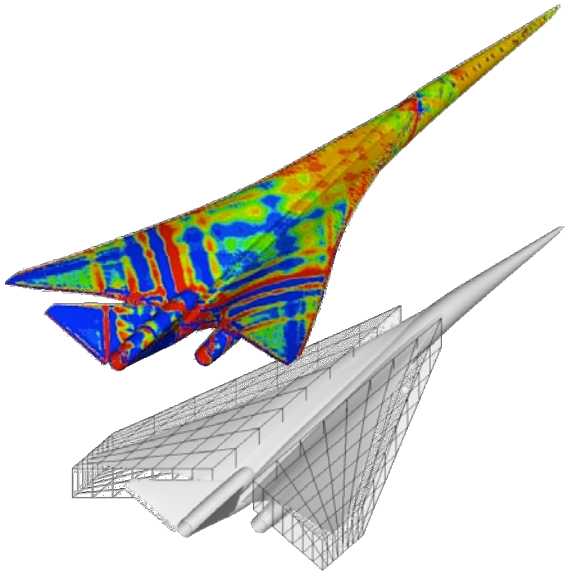
Email the development team:
susquared-dev@lists.stanford.edu

STANFORD AERONAUTICS & ASTRONAUTICS

aerospacedesignlab

SU^2 is under active development by the Aerospace Design Laboratory at Stanford University. Visit the ADL at:

http://adl.stanford.edu



SU^2

STANFORD UNIVERSITY
Unstructured Code

Open-Source Analysis and Design

aerospacedesignlab

High-Fidelity Analysis

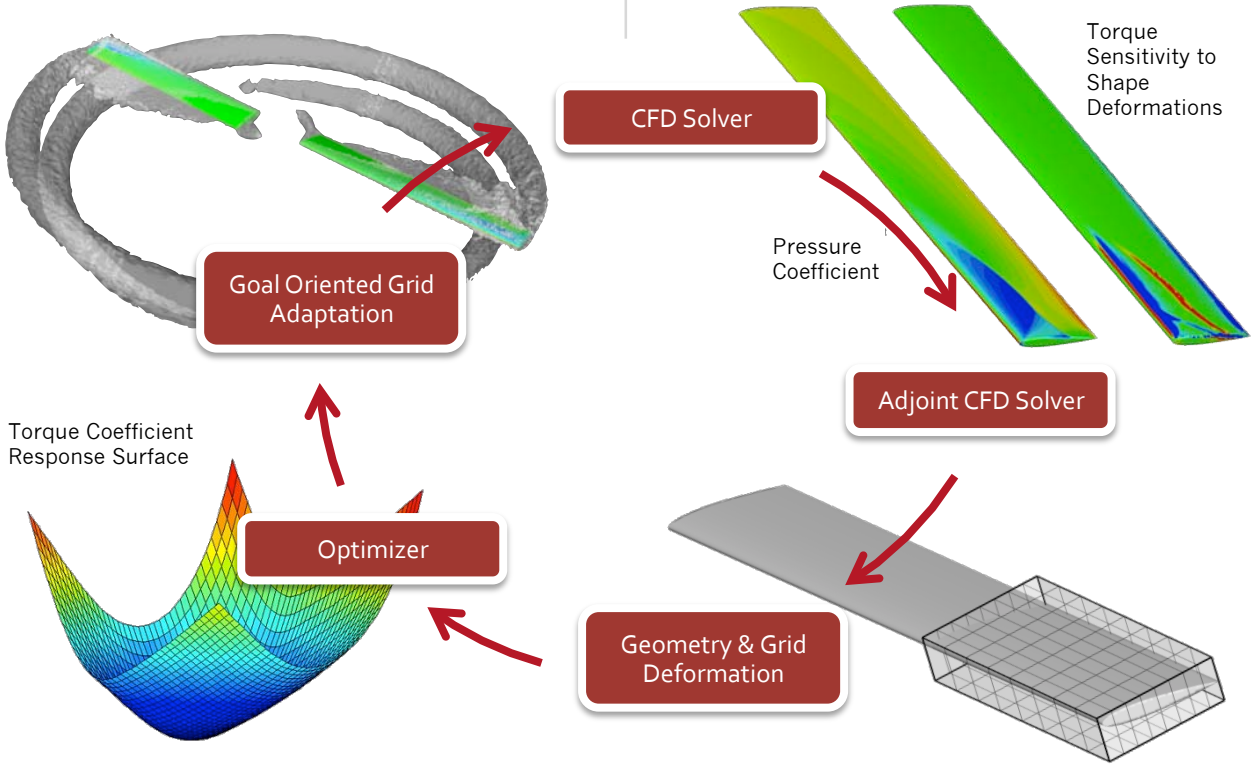
- Usable for internal and external aerodynamics
- Handles unstructured grids and includes a Pointwise® plugin for mesh generation
- Euler, Navier-Stokes, RANS, rotating frame, axisymmetric and incompressible equations
- Steady and time-accurate analyses
- Convergence acceleration including agglomeration multi-grid
- Parallelism using MPI

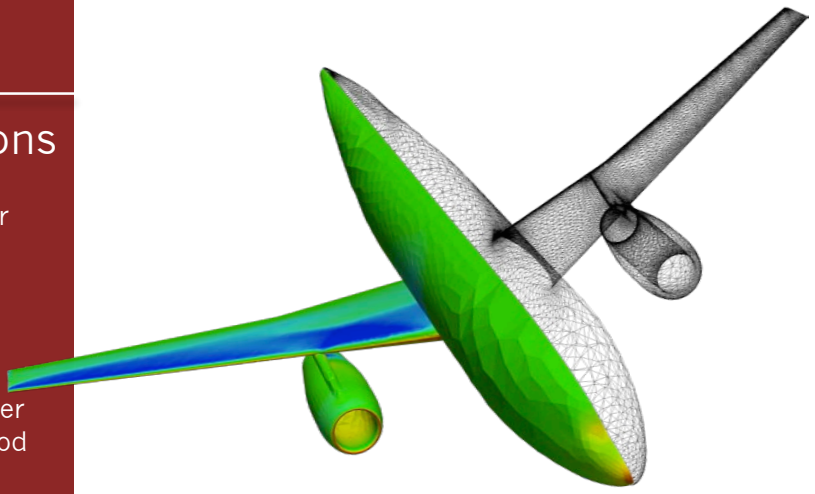
Shape Optimization

- Self-contained optimization environment using standard python libraries, such as NumPy and SciPy
- Gradient computation using the continuous adjoint approach
- 3D design variable definition using free-form deformation boxes
- Built-in geometry and mesh deformation

Multi-Physics Simulations

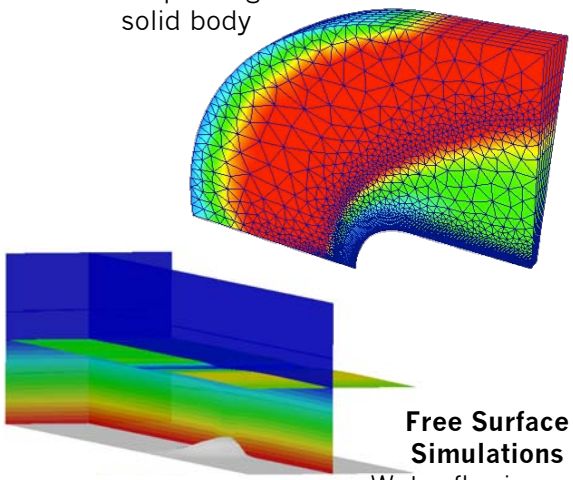
- Flexible C++ based architecture for rapid implementation of new equations and source terms
- “Solution containers” allow for simultaneous analysis of different equation sets with tight coupling
- Free surface simulations of air-water interfaces using the level-set method
- Multi-species plasma solver for simulating ionized flows in strong electric fields or behind hypersonic shock waves





Unstructured High-Fidelity Analysis
DLR-F6 pressure contours

Reacting Navier-Stokes
Electrons generated by arc heater passing over a solid body



Free Surface Simulations
Water flowing over a bump in a channel