



# US3D: Aerodynamic and Aerothermodynamic Simulations Software (20110126, Dr. Graham Candler)

## Computational Fluid Dynamics Aerodynamic Model

The US3D software models high-speed aerodynamics and aerodynamic heating problems and is faster, more accurate, general, scalable and flexible than any other existing computational fluid dynamics code. The scalability of the program means it is able to solve very large problems on parallel computers in a cost-effective manner. The use of an unstructured grid allows the software to solve a wider range of time-dependent problems and makes it more applicable to more complicated geometries than the structured grid formulation used in the NASA DPLR code.

## Software, Support and Training

The US3D software, technical support and training is available from [VirtusAero](https://www.virtusaero.com). Information about obtaining the [US3D license](https://www.virtusaero.com) is on the Product and Services page of VirtusAero's website. VirtusAero offers installation and usage support through the US3D Helpdesk, as well as user training and tutorials. They also offers custom programming for specialized analysis and post-processing related to US3D.

[Contact VirtusAero](mailto:support@virtusaero.com) at support@virtusaero.com

## Highly Scalable and Efficient Aerodynamics Simulation

Simulating heat flows in aerodynamic applications is of critical importance in both supersonic flight and planetary entry for spacecraft. These applications are critical for the safety of the pilots and while experimental testing of materials is essential, it is expensive and difficult to reproduce the conditions of spacecraft reentry. Aerodynamic and aerothermodynamic simulation software, such as US3D, is key to preparing aircraft and spacecraft for all eventualities.

## BENEFITS OF COMPUTATIONAL AERODYNAMICS SIMULATION USING THE US3D SOFTWARE PACKAGE:

- The US3D code is more accurate, general, scalable, flexible and faster than any other existing computational fluid dynamics code.
- The code uses an unstructured grid, allowing for a wider range of time-dependent problems to be solved.
- The key feature of the US3D code is that it is highly scalable and efficient, making it possible to solve very large problems on parallel computers in a cost-effective manner.

## Researchers

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